DVP-K880D

RMT-D110E/D111E

SERVICE MANUAL

Self Diagnosis Supported model

Chinese Model
Hong Kong Model
Singapore Model
Taiwan Model

SPECIFICATIONS

CD/DVD player

Laser Semiconductor laser
Signal format system
NTSC /PAL

Audio characteristics

Frequency response
DVD (PCM 96 kHz): 2 Hz to 44 kHz (±1 dB)*
DVD (PCM 48 kHz): 2 Hz to 22 kHz (±0.5 dB)
CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio
More than 110 dB (LINE OUT (AUDIO 1, 2) connectors only)
Harmonic distortion
Less than 0.0025%
Dynamic range
More than 100 dB (DVD)
More than 97 dB (CD)
Wow and flutter
Less than detected value (±0.001% W PEAK)

Outputs and inputs

	Jack type	Output level	Load impedance
LINE OUT (AUDIO 1, 2)	Phono jacks	2 Vrms (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT (OPTICAL)	Optical output connector	–18 dBm	Wave length: 660 nm
DIGITAL OUT (COAXIAL)	Phono jack	0.5 Vp-p	75 ohms terminated
LINE OUT (VIDEO 1, 2)	Phono jacks	1.0 Vp-p	75 ohms, sync negative
S VIDEO OUT (1, 2)	4-pin mini DIN	Y: 1.0 Vp-p Y: 1.0 Vp-p C: 0.3 Vp-p (PAL) 0.286 Vp-p (NTSC)	75 ohms, sync negative 75 ohms terminated
COMPONENT VIDEO OUT (Y, CB/B-Y, CR/R-Y)	Phono jacks	Y: 1.0 Vp-p CB/B-Y, CR/R-Y: 0.7 Vp-p	75 ohms, sync negative 75 ohms
PHONES	Phone jack	12 mW	32 ohms
5.1 OUTPUT	Phono jacks	2 Vrms (at 50 kilohms)	Over 10 kilohms
MIC 1, 2 (front) MIC 3, 4 (rear)	Standard jacks		

– Continued on next page –

DVD VIDEO
COMPACT disc DIGITAL VIDEO

CD/DVD PLAYER

MICROFILM

SONY®

General

Power requirements
220 - 240V AC, 50/60 Hz
110V AC, 50/60 Hz
See page 2 for further informations.

Power consumption
18 W

Dimensions (approx.)
430 × 95 × 305 mm (w/h/d)
incl. projecting parts

Mass (approx.)
3.5 kg

Operating temperature
5 °C to 35 °C

Operating humidity
5% to 90%

Supplied accessories

- Audio/video connecting cord (1)
- S video cord (1)
- Remote commander (remote)
  RMT-D111E (1), RMT-D110E (1)
- R6 (size AA) batteries (4)

* *The signals from LINE OUT (AUDIO 1, 2) connectors and 5.1 ch L,R connectors are measured. When you play the PCM sound tracks with 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL, COAXIAL) are converted to 48 kHz (sampling frequency).*

Design and specifications are subject to change without notice.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:
The use of optical instrument with this product will increase eye hazard.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

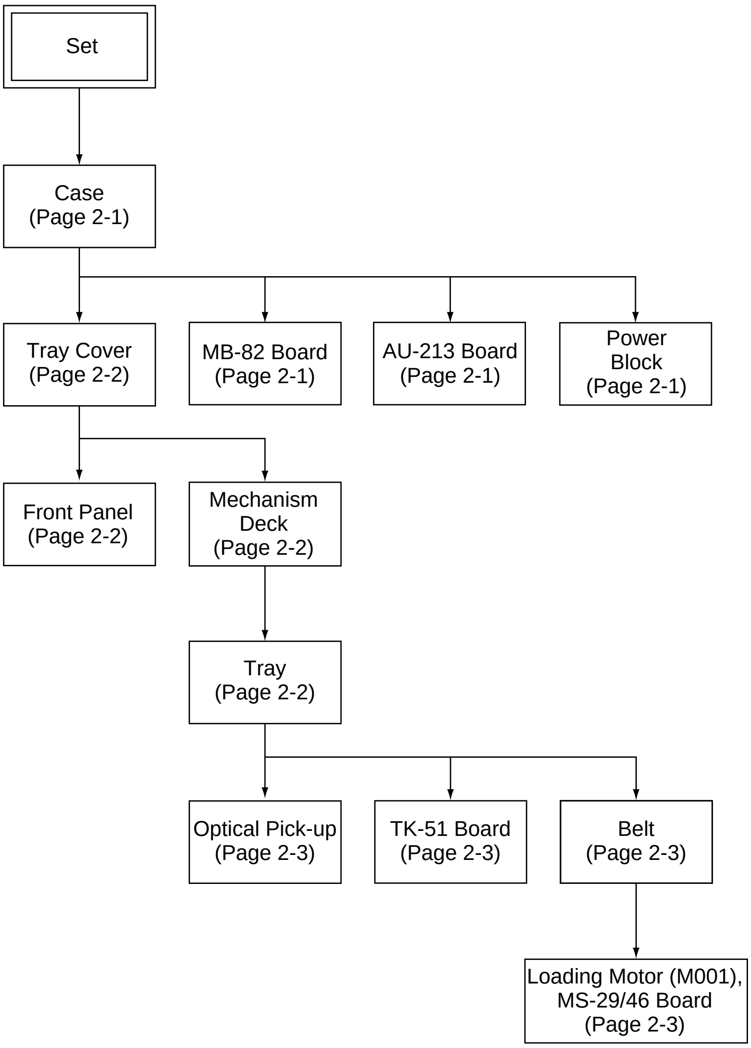
TABLE OF CONTENTS

Section	Title	Page
	Service Note	4
1.	GENERAL	
	Getting Started	1-1
	Playing Discs	1-3
	Using Various Functions with the Control Menu	1-5
	Enjoying Karaoke	1-12
	Settings and Adjustments	1-14
	Self-Diagnosis Function	1-18
	Index to Parts and Controls	1-19
2.	DISASSEMBLY	
2-1.	Case Removal	2-1
2-2.	MB-82 Board Removal	2-1
2-3.	Power Block Removal	2-1
2-4.	AU-213 Board Removal	2-1
2-5.	Tray Cover Removal	2-2
2-6.	Front Panel Removal	2-2
2-7.	Mechanism Deck Removal	2-2
2-8.	Tray Removal	2-2
2-9.	Optical Pick-up Removal	2-3
2-10.	Belt, Loading Motor (M001), MS-29/46, TK-51 Board Removal	2-3
2-11.	Internal View	2-4
2-12.	Circuit Boards Location	2-5
3.	BLOCK DIAGRAMS	
3-1.	Overall Block Diagram	3-1
3-2.	RF/Servo Block Diagram	3-3
3-3.	Signal Process/Video Block Diagram	3-5
3-4.	System Control Block Diagram	3-7
3-5.	Audio (1) Block Diagram	3-9
3-6.	Audio (2) Block Diagram	3-11
3-7.	Audio (3) Block Diagram	3-13
3-8.	Interface Control Block Diagram	3-15
3-9.	Power Block Diagram	3-17
4.	PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS	
4-1.	Frame Schematic Diagram	4-3
	Frame (1) Schematic Diagram	4-3
	Frame (2) Schematic Diagram	4-5
4-2.	Printed Wiring Boards and Schematic Diagrams	4-7
	TK-51 Printed Wiring Board	4-7
	TK-51 Schematic Diagram	4-11
	MS-29/46 Printed Wiring Board and Schematic Diagram	4-13
	MB-82 Printed Wiring Board	4-15
	MB-82 (AV DECODER) Schematic Diagram	4-19
	MB-82 (SDRAM) Schematic Diagram	4-21
	MB-82 (SERVO DSP) Schematic Diagram	4-23
	MB-82 (DRIVE) Schematic Diagram	4-25
	MB-82 (ARP) Schematic Diagram	4-27
	MB-82 (SYSTEM CONTROL) Schematic Diagram	4-29
	MB-82 (HGA) Schematic Diagram	4-31
	MB-82 (CLOCK GENERATOR/AUDIO DSP/V EQ/NR) Schematic Diagram	4-33
	MB-82 (KARAOKE DSP) Schematic Diagram	4-35
	MB-82 (DAC) Schematic Diagram	4-37
	MB-82 (BIAS) Schematic Diagram	4-39
	AU-213 (MIC AMP/AUDIO 1) Schematic Diagram	4-41
	AU-213 (AUDIO 2) Schematic Diagram	4-43
	AU-213 (VIDEO BUFFER) Schematic Diagram	4-45
	AU-213 Printed Wiring Board	4-47
	FL-102 Printed Wiring Board	4-51
	FL-102 (FUNCTION SWITCH) Schematic Diagram	4-55
	FL-102 (IF CON) Schematic Diagram	4-57
	FR-151 Schematic Diagram	4-59
	FR-151 Printed Wiring Board	4-61
	SW-318 Printed Wiring Board and Schematic Diagram	4-62
	HP-112 Printed Wiring Board and Schematic Diagram	4-63
	MC-120 Schematic Diagram	4-65
	MC-120 Printed Wiring Board	4-67
	VR-70 Printed Wiring Board	4-68
	VR-70 Schematic Diagram	4-69
	HS-030SH/030SU Printed Wiring Board	4-71
	HS-030SH/030SU Schematic Diagram	4-73
5.	IC PIN FUNCTION DESCRIPTION	
5-1.	System Control Pin Function (MB-82 Board IC202)	5-1
6.	TEST MODE	
6-1.	General Description	6-1
6-2.	Starting Test Mode	6-1
6-3.	Syscon Diagnosis	6-1
6-4.	Drive Auto Adjustment	6-5
6-5.	Drive Manual Operation	6-7
6-6.	Mecha Aging	6-9
6-7.	Emergency History	6-9
6-8.	Version Information	6-10
6-9.	Video Level Adjustment	6-10
7.	ELECTRICAL ADJUSTMENTS	
7-1.	Power Supply Adjustment	7-1
1.	Power Supply Check (HS-030SH/030SU BOARD)	7-1
7-2.	Adjustment of Video System	7-2
1.	Video Level Adjustment (MB-82 BOARD)	7-2
2.	S-terminal Output Check (MB-82 BOARD)	7-2
3.	Checking Component Video Output B-Y (MB-82 BOARD)	7-2
4.	Checking Component Video Output R-Y (MB-82 BOARD)	7-2
5.	Checking Component Video Output Y (MB-82 BOARD)	7-3
6.	Checking S Video Output S-C (MB-82 BOARD)	7-3
7-3.	Adjustment Related Parts Arrangement	7-4
8.	REPAIR PARTS LIST	
8-1.	Exploded Views	8-1
8-1-1.	Case Assembly	8-1
8-1-2.	Front Panel Assembly	8-2
8-1-3.	Chassis Assembly	8-3
8-1-4.	Mechanism Deck Assembly	8-4
8-2.	Electrical Parts List	8-5

SERVICE NOTE

1. DISASSEMBLY

- This set can be disassembled in the order shown below.



2. NOTE ON REMOVE THE CASE

1) Remove seven screws. (See Fig. 1)
2) Open the side of case. (See Fig. 1)
3) Remove the case as lift straight. (See Fig. 1)

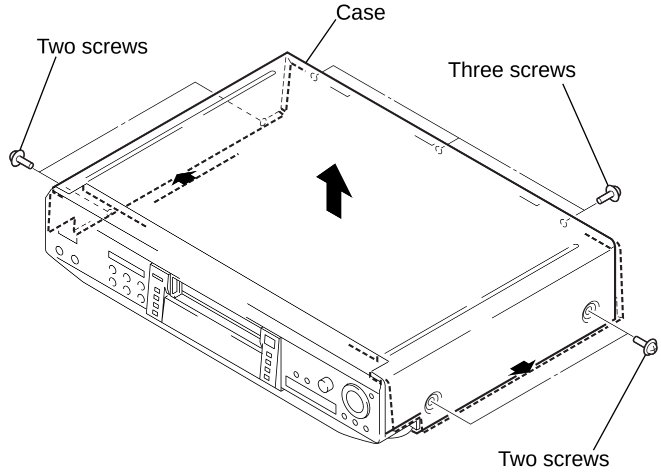


Fig. 1

3. DISC REMOVAL PROCEDURE (at POWER OFF)

1) Insert a tapering driver into the aperture of the unit bottom, and move the lever of chuck cam in the direction of the arrow Ⓐ. (See Fig. 2)
2) Draw out the tray in the direction of the arrow Ⓑ, and remove a disc. (See Fig. 2)

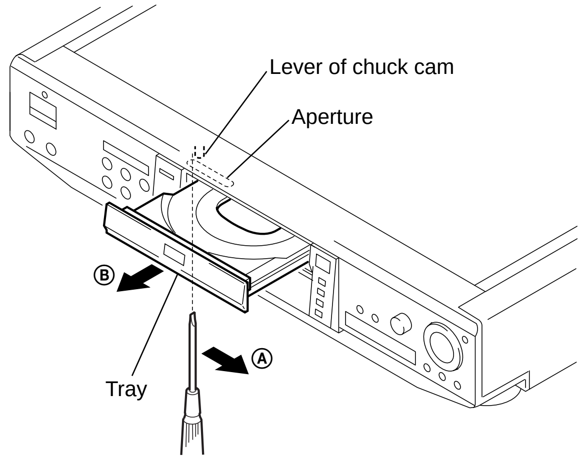


Fig. 2

4. HOW TO SERVICE MB-82 BOARD

1) Remove the case from the set. (Refer to 2-1)
2) Remove the MB-82 board. (Refer to 2-1)
3) Set the MB-82 board as shown in Fig. 3.
   Note: Do not disconnect wiring, except FMA-7/8/9/10.

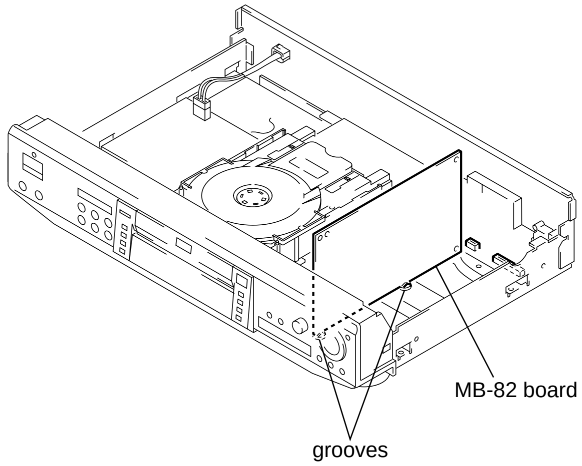


Fig. 3

SECTION 1
GENERAL

This section is extracted from instruction manual (3-867-039-11).

About This Manual

Conventions
- Instructions in this manual describe the controls on the player. You can also use the controls on the remote if they have the same or similar names as those on the player.
- The icons on the right are used in this manual:

Icon	Meaning
(remote icon)	Indicates that you can use only the remote to do the task.
(tip icon)	Indicates tips and hints for making the task easier.
DVD	Indicates the functions for DVD VIDEOs.
VIDEO CD	Indicates the functions for VIDEO CDs
CD	Indicates the functions for Audio CDs.

This Player Can Play the Following Discs

	DVD VIDEOs		VIDEO CDs		Audio CDs	
Disc logo	DVD VIDEO		COMPACT disc DIGITAL VIDEO		COMPACT disc DIGITAL AUDIO TEXT	
Contents	Audio + Video		Audio + Video		Audio	
Disc size	12 cm	8 cm	12 cm	8 cm	12 cm	8 cm (CD single)
Play time	About 4 h (for single-sided DVD)/ about 8 h (for double-sided DVD)	About 80 min. (for single-sided DVD)/ about 160 min. (for double-sided DVD)	74 min.	20 min.	74 min.	20 min

"DVD VIDEO" logo is a trademark.

This player switches the color system, NTSC or PAL, according to the connected TV. (For details, see page 9)

Region code of DVDs you can play on this unit

Your DVD player has a region code printed on the back of the unit and will only play DVDs that are labeled with identical region codes.

DVDs labeled (ALL) will be also played on this unit.

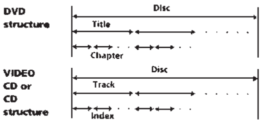
If you try to play any other DVD, the message "Playing this disc prohibited by area limits." will appear on the TV screen.

Depending on the DVD, no region code indication may be labeled even though playing the DVD is prohibited by the area limits

Note on playback operations of DVDs and VIDEO CDs
Some playback operations of DVDs and VIDEO CDs may be intentionally fixed by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also refer to the instructions supplied with the DVDs or VIDEO CDs.

Terms for discs

- **Title**
  The longest sections of a picture or a music piece on a DVD; a movie, etc., for a picture piece on a video software; or an album, etc., for a music piece on an audio software. Each title is assigned a title number enabling you to locate the title you want.
- **Chapter**
  Sections of a picture or a music piece that are smaller than titles. A title is composed of several chapters. Each chapter is assigned a chapter number enabling you to locate the chapter you want. Depending on the disc, no chapters may be recorded.
- **Track**
  Sections of a picture or a music piece on a VIDEO CD or a CD. Each track is assigned a track number enabling you to locate the track you want.



- **Index (CD) / Video Index (VIDEO CD)**
  A number that divides a track into sections to easily locate the point you want on a VIDEO CD or a CD. Depending on the disc, no indexes may be recorded.
- **Scene**
  On a VIDEO CD with PBC functions, the menu screens, moving pictures and still pictures are divided into sections called "scenes." Each scene is assigned a scene number enabling you to locate the scene you want.

Note on PBC (Playback Control) (VIDEO CDs)
This player conforms to Ver. 1.1 and Ver. 2.0 of VIDEO CD standards. You can enjoy two kinds of playback according to the disc type.

Disc type	You can
VIDEO CDs without PBC functions (Ver. 1.1 discs)	Enjoy video playback (moving pictures) as well as music.
VIDEO CDs with PBC functions (Ver. 2.0 discs)	Play interactive software using menu screens displayed on the TV screen (PBC Playback), in addition to the video playback functions of Ver 1.1 discs. Moreover, you can play high-resolution still pictures, if they are included on the disc.

Discs that the player cannot play
The player cannot play discs other than the ones listed in the table on page 4. CD-R, CD-ROMs including PHOTO CDs, data sections in CD-EXTRAs, DVD-ROMs etc., cannot be played.

When playing DTS*-encoded CDs, excessive noise will be heard from the analog stereo outputs. To avoid possible damage to the audio system, the consumer should take proper precautions when the analog stereo outputs of the DVD player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel DTS Digital Surround™ decoder system must be connected to the digital output of the DVD player.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

* "DTS" is a trademark of Digital Theater Systems, Inc.

Precautions

On safety
- Caution – The use of optical instruments with this product will increase eye hazard.
- Should any solid object or liquid fall into the cabinet, unplug the player and have it checked by qualified personnel before operating it any further.

On power sources
- The player is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the player itself has been turned off.
- If you are not going to use the player for a long time, be sure to disconnect the player from the wall outlet. To disconnect the AC power cord (mains lead), grasp the plug itself; never pull the cord.
- Should the AC power cord (mains lead) need to be changed, have it done at a qualified service shop only.

On placement
- Place the player in a location with adequate ventilation to prevent heat build-up in the player.
- Do not place the player on a soft surface such as a rug that might block the ventilation holes on the bottom.
- Do not place the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust or mechanical shock.

On operation
- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the player. Should this occur, the player may not operate properly. In this case, remove the disc and leave the player turned on for about half an hour until the moisture evaporates.

On adjusting volume
- Do not turn up the volume while listening to a portion with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level portion is played.

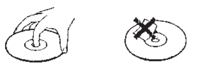
On cleaning
- Clean the cabinet, panel and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

If you have any questions or problems concerning your player, please consult your nearest Sony dealer.

IMPORTANT NOTICE
Caution: The enclosed DVD player is capable of holding a still video image or On screen display image on your television screen indefinitely. If you leave the still video image or On screen display image displayed on your TV for an extended period of time you risk permanent damage to your television screen. Projection televisions are very susceptible.

Notes on Discs

On handling discs
- To keep the disc clean, handle the disc by its edge. Do not touch the surface.
- Do not stick paper or tape on the disc.
  If there is glue (or a similar substance) on the disc, remove the glue completely before using the disc.



- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as there can be considerable rise in temperature inside the car.
- After playing, store the disc in its case.

On cleaning
- Before playing, clean the disc with a cleaning cloth. Wipe the disc from the center out.

- Do not use solvents such as benzine, thinner, commercially available cleaners or anti-static spray intended for vinyl LPs.

Getting Started

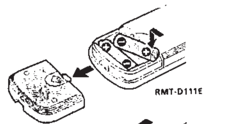
This section describes how to hook up the CD/DVD player to a TV (with audio/video input jacks) and/or an AV receiver (amplifier). You cannot connect this player to a TV which does not have a video input connector. Be sure to turn off the power of each component before making the connections.

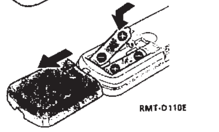
Unpacking

Check that you have the following items:
- Audio/video connecting cord (1)
- S video cord (1)
- Remote commander (remote)
  RMT-D111E (1), RMT-D110E (1)
- R6 (size AA) batteries (4)

Inserting batteries into the remote

You can control the player using the supplied remote. Insert two R6 (size AA) batteries by matching the + and – on the batteries. When using the remote, point it at the remote sensor on the player.





You can control TVs and AV receivers using the supplied remote
See page 73.

Notes
- Do not leave the remote in an extremely hot or humid place.
- Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
- Do not expose the remote sensor to direct sunlight or lighting apparatuses. Doing so may cause a malfunction.
- If you will not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

TV Hookups

Getting Started

This connection is for listening to the sound through TV speakers (2ch - L,R). Refer to the instructions supplied with the component to be connected.

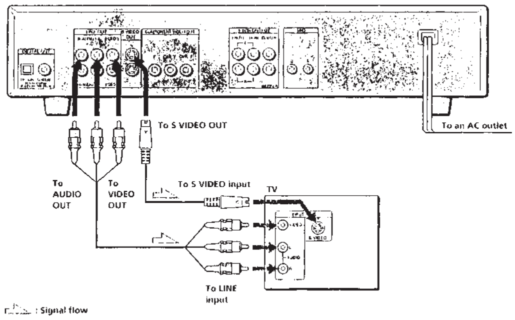
Required cords

Audio/video connecting cord (supplied) (1)

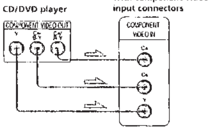
S video cord (supplied) (1)

When connecting the cords, be sure to match the color-coded cord to the appropriate jacks on the components: Yellow (video) to Yellow, Red (right) to Red and White (left) to White. Be sure to make connections firmly to avoid hum and noise.
If your TV has an S video input connector, connect the component via the S VIDEO OUT connector using the S video cord. You will get a better picture.
Refer to the instructions supplied with the TV to be connected.

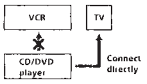
CD/DVD player



If you connect the player to a monitor or projector having component video input connectors that conform to output signals from the COMPONENT VIDEO OUT (Y, CB/B-Y, CR/R-Y) connectors on the player
Connect the component via the COMPONENT VIDEO OUT connectors using three video connecting cords (not supplied) of the same kind. You will get a better picture.



Notes
- Refer to the instructions supplied with the component to be connected.
- Do not connect this player to a video deck. If you view the pictures on your TV after making the connections shown below, a picture noise may appear.



- Depending on the TV or receiver (amplifier), sound distortion may occur because the audio output level is high. In this case, set "AUDIO ATT" in "AUDIO SETUP" to "ON" in the setup display. For details, see page 68.

Setups for the player

Some setups are necessary for the player depending on the TV or other components to be connected.
Use the setup display to change the various settings.
For details on using the setup display, see page 59.

- **If the color system of the TV is NTSC or DUAL**
  Since the color system of the unit is set to NTSC, you can use the unit as it is.
- **If the color system of the TV is PAL**
  To set the unit to PAL, turn on the unit while pressing the ⏸ button of the unit. To reset to NTSC, turn off the unit and then turn on as described above.
- **To connect the player to a wide-screen TV**
  In the setup display, set "TV TYPE" in "SCREEN SETUP" to "16:9" (default setting). For details, see page 63.
- **To connect the player to a normal TV**
  In the setup display, set "TV TYPE" in "SCREEN SETUP" to "4:3 LETTER BOX" or "4:3 PAN SCAN." For details, see page 63.

Getting Started

Receiver (Amplifier) Hookups

Getting Started

This connection is for listening to the sound through speakers connected to a receiver (amplifier such as an integrated stereo amplifier, a receiver having a built-in Dolby Pro Logic decoder, etc.). Refer to the instructions supplied with the component to be connected.
You can enjoy 5.1 channel surround sound by connecting a receiver (amplifier) with 5.1 channel inputs. See page 34.

You can enjoy surround when connecting front speakers only
You can use 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers (VES: Virtual Enhanced Surround). For details, see page 34.

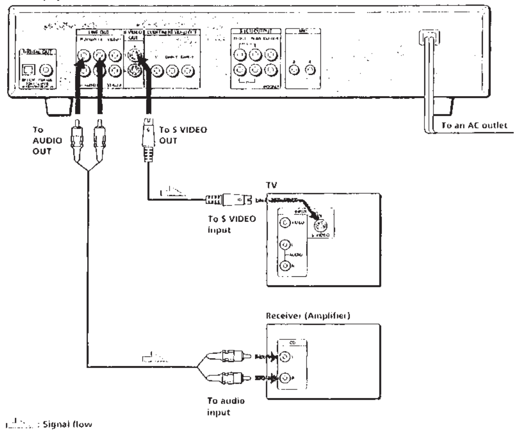
Required cords

Audio connecting cord (not supplied) (1)

S video cord (supplied) (1)

When connecting the cords, be sure to match the color-coded cord to the appropriate jacks on the components: Red (right) to Red and White (left) to White. Be sure to make connections firmly to avoid hum and noise.

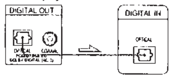
CD/DVD player



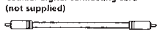
If you have a digital component such as a receiver (amplifier) with a digital connector, DAT or MD
Connect the component via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord (not supplied).
When you play a DVD, set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "DOLBY DIGITAL" to "D-PCM," "MPEG" to "PCM" and "DTS" to "OFF" in the setup display. (page 69)

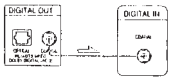
■ When using an optical digital connecting cord

Take off the cap and plug in the optical digital connecting cord.



■ When using a coaxial digital connecting cord



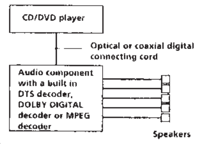


Notes
- Refer to the instructions supplied with the component to be connected.
- You cannot make digital audio recordings of discs recorded in multi-channel surround format directly using an MD deck or DAT deck.

> **When you make the connections above, do not set "DOLBY DIGITAL" to "DOLBY DIGITAL", "MPEG" to "MPEG" and "DTS" to "ON." If you do, a loud noise will suddenly come out from the speakers, affecting your ears or causing the speakers to be damaged.**

If you have an audio component with a built in DTS decoder, Dolby Digital decoder or MPEG decoder
Connect the component via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord (not supplied).

- ■ **When you play a DVD that is recorded in DTS format**
  Set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "DTS" to "ON" in the setup display. (page 69)
- ■ **When you play a DVD that is recorded in Dolby Digital format**
  Set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "DOLBY DIGITAL" to "DOLBY DIGITAL" in the setup display. (page 69)
- ■ **When you play a DVD that is recorded in MPEG format**
  Set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "MPEG" to "MPEG" in the setup display. (page 69)



Notes
- Refer to the instructions supplied with the component to be connected
- **When you do not connect an audio component with a built in DTS decoder, do not set "DTS" to "ON."**
- **When you do not connect an audio component with a built in DOLBY DIGITAL decoder, do not set "DOLBY DIGITAL" to "DOLBY DIGITAL."**
- **When you do not connect an audio component with a built in MPEG decoder, do not set "MPEG" to "MPEG."**

Setups for the player

Some setups are necessary for the player depending on the components to be connected
Use the setup display to change the various settings.
For details on using the setup display, see page 59.

- **To listen to the sound through speakers connected to a receiver (amplifier) having a digital connector or to output the sound to a digital component such as a DAT or MD deck**
  When you play a DVD, set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "DOLBY DIGITAL" to "D-PCM," "MPEG" to "PCM" and "DTS" to "OFF" in the setup display (page 69). These are the default settings.

Getting Started

5.1 Channel Surround Hookups

Some DVDs have a sound track with up to 5.1 channels recorded in Dolby* Digital or MPEG AUDIO format. Using a receiver (amplifier) having 5.1 channel inputs and the 5 (+1) speakers, you can enjoy more real audio presence in the comfort of your own home.
"5 channel" stands for the 2 front speakers (Left and Right), 2 rear speakers (Left and Right) and 1 center speaker. The "0.1 channel" (+1) stands for the subwoofer which outputs the bass.
Even if you have fewer than 5 (+1) speakers, the player distributes the output signal to the speakers appropriately.
This player has VIRTUAL 3D SURROUND mode.
You can use the 3D sound imaging to shift the sound of the rear speakers away from the actual speaker position (VIRTUAL REAR SHIFT) or to create 3 sets of virtual rear speakers from 1 set of actual rear speakers (VIRTUAL MULTI REAR). For details on the VIRTUAL 3D SURROUND mode, see page 34

Note
When a DVD has a sound track with 7.1 channels recorded in MPEG AUDIO format, the output audio signals are mixed down to 5.1 channels.

Speaker placement

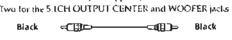
For the best possible surround sound, we recommend the following conditions.
- Use higher performance speakers.
- Use rear and center speakers that match your front speakers in size and performance.
- All speakers should be the same distance from the listening position.
- Place the subwoofer between the front (L, R) speakers if possible.

Note
Do not place the center or rear speakers farther away from the listening position than the front speakers.

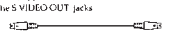
Required cords

Audio cords (not supplied)
Two for the 5.1CH OUTPUT FRONT and REAR jacks

Monaural audio cords (not supplied)
Two for the 5.1CH OUTPUT CENTER and WOOFER jacks



S video cord (supplied)
One for the S VIDEO OUT jacks



Notes
- Do not connect the power cord to an AC outlet or press the POWER switch before completing all connections.
- The cord connectors should be fully inserted into the jacks. Loose connection may cause hum and noise.
- Jacks and plugs of the connecting cords are color-coded as follows:
  Red jacks and plugs: Right audio channel
  White jacks and plugs: Left audio channel
  You can use either red or white cables to connect the center speaker and subwoofer.
- When you connect the component via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord (not supplied), see page 11.

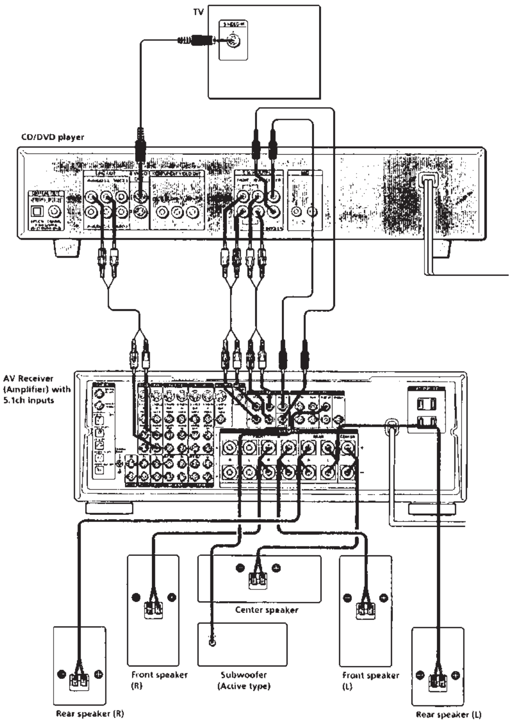
Setups for the player

Some setups are necessary for the player depending on the components to be connected.
Use the setup display or the Control Menu display to change the various settings
For details on using the setup display, see page 59.
For details on enjoying Digital Cinema Sound, see page 34

- **To enjoy Dolby Digital or MPEG AUDIO surround sound by connecting the player to a receiver (amplifier) with 5.1 ch inputs**
  Set each speaker position or distance, etc. See page 71.

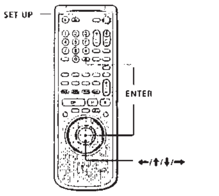
To enjoy Dolby Digital Surround, turn off the karaoke mode. For details, see "Setting the player to karaoke mode" on page 49.

* Manufactured under license from Dolby Laboratories. "Dolby", "AC-3", "Pro Logic" and the double-D symbol DD are trademarks of Dolby Laboratories.
Confidential Unpublished Works. ©1992-1997 Dolby Laboratories, Inc. All rights reserved.

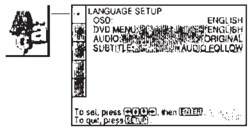


Selecting the Language for On-Screen Display

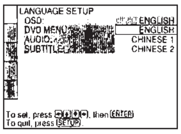
You can select the language for the setup display, the Control Menu display or the messages displayed on the screen. Default setting is "ENGLISH."



1 Press SET UP and select "LANGUAGE SETUP" using ↑/↓, and then press ENTER.



2 Select "OSD" using ↑/↓, then press → or ENTER.



3 Select "CHINESE1" or "CHINESE2" using ↑/↓, then press ENTER.

To cancel using the setup display on the way
Press SET UP.

Note
The languages you can select are the ones displayed in step 2. For details, see page 62

Playing Discs

This chapter describes how to play a DVD/CD/VIDEO CD.

Playing Discs DVD VIDEO CD CD

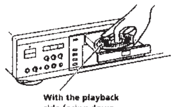
Depending on the DVD or VIDEO CD, some operations may be different or restricted. Refer to the instructions supplied with your disc.

1 Make settings on your TV.
Turn on the TV and select the video input so that you can view the pictures from this player.

When using a receiver (amplifier)
Turn on the receiver (amplifier) and select the appropriate position so that you can listen to the sound from this player.

2 Press I/⏻ (POWER) to turn on the player.
The indicator (red) above the I/⏻ (POWER) button changes to green and the front panel display lights up.

3 Press ≜, and place the disc on the disc tray.

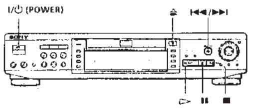


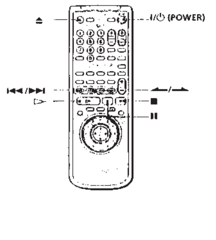
4 Press ▷.
The disc tray closes, and the player starts playback (Continuous Play). Adjust the volume on the TV or the receiver (amplifier).

After following Step 4
■ When playing a DVD
A DVD menu or title menu may appear on the TV screen (see page 19).
■ When playing a VIDEO CD
The menu screen may appear on the TV screen depending on the VIDEO CD. You can play the disc interactively, following the instructions on the menu screen. (PBC Playback, see page 20.)

💡 **You can turn on the player using the remote**
Press I/⏻ (POWER) when the indicator above the I/⏻ (POWER) button on the front panel is lit in red.

Notes
- If you leave the player or the remote in pause or stop mode for 15 minutes, the screen saver image appears automatically. To make the screen saver image go away, press ▷. (If you want to set the screen saver function to off, see page 63.)
- The indicator above the I/⏻ (POWER) button lights up in red when the power is turned off.
- If you don't operate the player or the remote for more than 30 minutes when a disc is not being played, the power is automatically turned off. (Auto Power Off function)



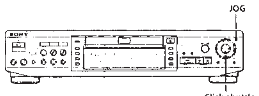


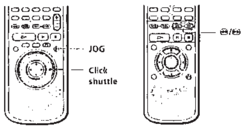
To	Operation
Stop	Press ■.
Pause	Press ❚❚.
Resume play after pause	Press ❚❚ or ▷.
Go to the next chapter, track or scene in continuous play mode	On the player: Turn ⏮/⏭ clockwise to select the chapter. On the remote: Press ⏭.
Go back to the preceding chapter, track or scene in continuous play mode	On the player: Turn ⏮/⏭ counterclockwise to select the chapter. On the remote: Press ⏮.
Go to the next index (VIDEOCD/CD only)	Press ▸▸.
Go back to the preceding index (VIDEOCD/CD only)	Press ◂◂.
Stop play and remove the disc	Press ≜.

You can play discs in various modes such as Program Play using the on-screen menu (Control Menu). For operations of Control Menu, see page 23.

Playing at Various Speeds/Frame by Frame DVD VIDEO CD CD

Using the click shuttle and the JOG button/indicator, you can play back a DVD/CD/VIDEO CD at various speeds or frame by frame. Each time you press JOG, it changes between shuttle mode and jog mode.



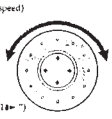


To change the playback speed (Shuttle mode)

Turn the click shuttle. The playback speed changes depending on the turning direction and angle as follows:

When you play back a DVD

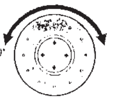
FF2▶▶ (about 30 times the normal speed)
⇕
FF1▶▶ (about 10 times the normal speed)
⇕
×2▶ (about twice the normal speed)
⇕
PLAY▶ (Normal speed)
⇕
SLOW1❚▶ (playback direction)
⇕
SLOW2❚▶ (playback direction – slower than "SLOW1❚▶")
⇕
PAUSE❚❚
⇕
SLOW2◀❚ (opposite direction – slower than "SLOW1◀❚")
⇕
SLOW1◀❚ (opposite direction)
⇕
×2◀ (about twice the normal speed)
⇕
FR1◀◀ (about 10 times the normal speed)
⇕
FR2◀◀ (about 30 times the normal speed)



If you turn the click shuttle quickly, the playback speed goes to FF2▶▶/FR2◀◀ at once.

When you play back a CD/VIDEO CD

FF2▶▶ (Faster than "FF1▶▶")
⇕
FF1▶▶
⇕
×2▶ (about twice the normal speed)*
⇕
PLAY▶ (Normal speed)
⇕
SLOW1❚▶ (playback direction)**
⇕
SLOW2❚▶ (playback direction – slower than "SLOW1❚▶")**
⇕
PAUSE❚❚
⇕
FR1◀◀
⇕
FR2◀◀ (Faster than "FR1◀◀")



* CD Only
** VIDEO CD Only

If you turn the click shuttle quickly, the playback speed goes to FF2▶▶/FR2◀◀ at once.

To return to continuous play
Press ▷.

💡 **To search for the picture using the button**
Keep pressing ◂◂ or ▸▸ on the remote. The playback speed is same as FR1◀◀ or FF1▶▶ when using the click shuttle. When you press ▷, the playback speed returns to normal.

Note
Depending on the DVD/VIDEO CD, you may not be able to do some of the operations described.

To play the disc frame by frame changing the playback speed (Jog mode) DVD VIDEO CD

1 Press JOG.
JOG lights up during jog mode. When you press JOG on the player, it pauses.

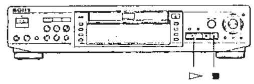
2 Turn the click shuttle.
Depending on the turning speed, the playback goes to frame-by-frame in the direction that the click shuttle is turned. If you turn the click shuttle with constant speed for a while, the playback speed goes to slow or normal.

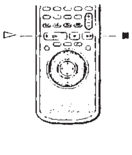
To return to Continuous Play
Press ▷.

Notes
- The JOG indicator shows the mode of the corresponding click shuttle. For example, when the JOG indicator on the remote is not lit, the remote click shuttle will remain in the shuttle mode even if the indicator on the player is lit.
- If you don't operate the click shuttle for about 20 seconds after pressing JOG, it returns to shuttle mode on the remote. On the player, it stays in jog mode.

Resuming Playback from the Point Where You Stopped the Disc (Resume Play) DVD VIDEO CD CD

The player stores the point where you stopped the disc and if "RESUME" appears on the front panel display. You can resume playback from that point.
As long as you do not open the disc tray, Resume Play is available even if you turn the power off.





1 While playing a disc, press ■ to stop playback.
"RESUME" appears in the front panel display and "When playing next time, disc restarts from point you stopped." appears on the TV screen.
If "RESUME" does not appear, Resume Play is not available.

2 Press ▷.
The player starts playback from the point where you stopped the disc in Step 1.

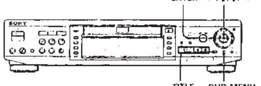
💡 **To play from the beginning of the disc**
When the playing time appears on the front panel display before you start playing, press ■ to reset the playing time, then press ▷.

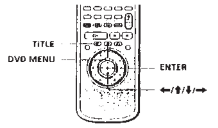
Notes
- Resume Play may not be available depending on the DVD.
- Resume Play is not available in Shuttle or Program Play mode.
- Depending on where you stopped the disc, the player may resume playback from a different point.
- The point where you stopped playing is cleared when:
  - you open or close the disc tray
  - you disconnect the AC power cord
  - you change the play mode
  - you start playback after selecting a title, chapter or track
  - you change the settings of "TV TYPE" in "SCREEN SETUP" in the setup display
  - you change the settings of "PARENTAL CONTROL" in "CUSTOM SETUP" in the setup display

Using the Menu for Each DVD DVD

Using the title menu

A DVD is divided into long sections of a picture or a music piece called "titles." When you play a DVD which contains several titles, you can select the title you want using the title menu.





1 Press TITLE.
The title menu appears on the TV screen. The contents of the menu vary from disc to disc.

2 Press ←/↑/↓/→ to select the title you want to play.
Depending on the disc, you can use the number buttons to select the title.

3 Press ENTER.
The player starts playing the selected title.

Notes
- Depending on the DVD, you may not be able to select the title.
- Depending on the DVD, a "title menu" may simply be called a "menu" or "title" in the instructions supplied with the disc. "Press ENTER." may also be expressed as "Press SELECT."

Using the DVD Menu

Using the DVD menu

Some DVDs allow you to select the disc contents using the menu. When you play these DVDs, you can select the language for the subtitles, the language for the sound, etc., using the DVD menu.

Playing Discs

1 Press DVD MENU.
The DVD menu appears on the TV screen. The contents of the menu vary from disc to disc.

2 Press ←/↑/↓/→ to select the item you want to change.
Depending on the disc, you can use the number buttons to select the item.

3 To change other items, repeat Step 2.

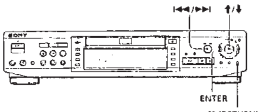
4 Press ENTER.

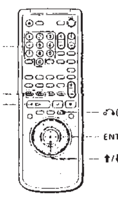
If you want to select the language for the DVD menu
Change the setting using "LANGUAGE SETUP" in the setup display. For details, see page 62.

Note
Depending on the DVD, a "DVD menu" may simply be called a "menu" in the instructions supplied with the disc

Playing VIDEO CDs with PBC Functions (PBC Playback) VIDEO CD

When playing VIDEO CDs with PBC functions (Ver 2.0 discs), you can enjoy simple interactive operations, operations with search functions, etc.
PBC Playback allows you to play VIDEO CDs interactively, following the menu screen on the TV screen. On this player, you can use the number buttons, ENTER, |◀◀, ▶▶|, ↑/↓ and ↶(RETURN) during PBC Playback.





1 Start playing a VIDEO CD with PBC functions, following Steps 1 to 4 in "Playing Discs" on page 15.

2 Select the item number you want.
On the player
Press ↑/↓ to select the item number.
On the remote
Press the number button of the item you want.

3 Press ENTER.

4 Follow the instructions on the menu screen for interactive operations.
Refer to the instructions supplied with the disc, as the operating procedure may differ according to the VIDEO CD.

Going back to the menu screen
Press ↶, |◀◀, or ▶▶|.

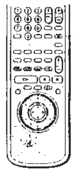
When playing VIDEO CDs with PBC functions
PBC playback starts automatically.

To cancel PBC playback of a VIDEO CD with PBC functions and play the disc in Continuous Play mode
There are two ways.
- Before you start playing, select the track you want using |◀◀ or ▶▶|, then press ENTER or ▷.
- Before you start playing, select the track number using the number buttons on the remote, then press ENTER or ▷.
  "Play without PBC" appears on the TV screen and the player starts Continuous Play. You cannot play still pictures such as a menu screen.
  To return to PBC playback, press ■ twice then press ▷.

Note
Depending on the VIDEO CD, "Press ENTER" in Step 3 may be expressed as "Press SELECT" in the instructions supplied with the disc

Using the Front Panel Display DVD VIDEO CD CD

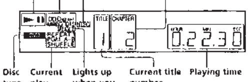
You can check information about the disc, such as the total number of the titles or the tracks or remaining time, using the front panel display.



Playing Discs

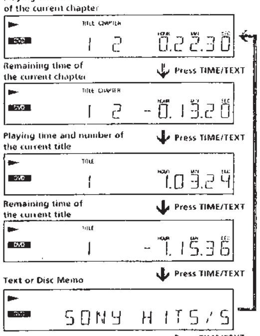
When playing back a DVD DVD

Display information while playing the disc



Checking the remaining time
Press TIME/TEXT.
Each time you press TIME/TEXT while playing the disc, the display changes as shown in the following chart.

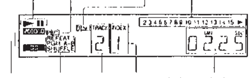
Playing Discs



Notes
- Depending on the DVD, the chapter number or time may not appear or you may not be able to change the front panel display
- While you are doing Shuffle Play or Program Play, the playing time of the title and the remaining time of the title are not displayed

When playing back a CD/VIDEO CD VIDEO CD CD

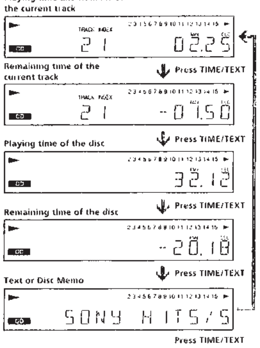
Display information while playing a disc



* Track numbers are displayed in the Music Calendar. When there are over 15 tracks, ▶ is displayed after "15." The track number disappears after playing

When playing VIDEO CDs with PBC functions
The current scene number is displayed instead of the current track number and the current index number. In this case, the front panel display does not change when you press TIME/TEXT. If a TEXT or Disc Memo is recorded on the disc, the front panel display changes to "Text or Disc Memo" display when you press TIME/TEXT (see page 29).

Checking the remaining time
Press TIME/TEXT.
Each time you press TIME/TEXT while playing a disc, the display changes as shown in the following chart



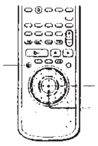
Note
While you are doing Shuffle Play, Program Play, or PBC playback, the playing time of the disc and the remaining time of the disc are not displayed.

Using Various Functions with the Control Menu

This chapter describes how to play discs in various modes and how to use the convenient features of the on-screen menu (Control Menu).

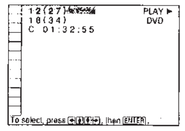
Using the Control Menu Display DVD VIDEO CD CD

Using the Control Menu display, you can select the start point, label a disc, change the angles, adjust the picture, set for Digital Cinema Sound, etc.
The items are different depending on the kind of disc.
For details on each Control Menu display item, see pages 26 to 46.

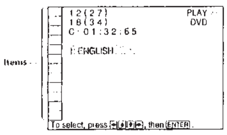


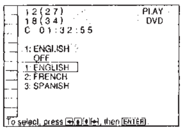
Using Various Functions with the Control Menu

1 Press DISPLAY to show the Control Menu display on the TV screen.

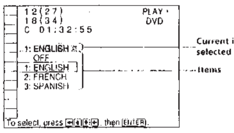


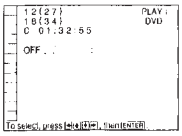
2 **Select the item you want using ↑/↓, then press ➡ or ENTER.**





3 **Select the item you want using ↑/↓, then press ENTER.**





Note
Some Control Menu display items require operations other than selecting the setting. For details on these items, see the relevant pages.

To cancel using the Control Menu display on the way
Press ⤺RETURN.

To display other items
Each time you press DISPLAY, the Control Menu display changes as follows:

→Control Menu display 1
↓
Control Menu display 2
(The items except the first three items from the top are changed to other items.)
↓
KARAOKE display (can be used only when the player is in karaoke mode.) (see page 47)
↓
ADVANCED display (see page 41)
↓
Control Menu display off

You can display some items using the remote
Some items can be displayed by pressing the button of the remote. In this case, only the item you selected is displayed. For the item and operations using the remote, see the pages of each item.

Control Menu Item List

TITLE **(DVD only) (page 26)**
CHAPTER **(DVD only) (page 26)**
TRACK **(VIDEO CD/CD only) (page 26)**
INDEX **(VIDEO CD/CD only) (page 26)**
SCENE **(VIDEO CD during PBC playback only) (page 26)**
You can search by selecting the title/chapter/track/index/scene.

TIME/TEXT **(page 27, 28, 29)**
TIME/MEMO **(page 27, 28, 29)**
You can check the playing time and remaining time of the current title/chapter/track and the total remaining time of the disc.
You can search by inputting the time code.
You can check the DVD TEXT or CD TEXT of the disc on the TV screen and the front panel display. When the disc is a VIDEO CD or the DVD TEXT or CD TEXT is not recorded on the disc, you can label the disc as a Disc Memo and check it.

AUDIO **(page 31)**
With DVDs recorded with multilingual sounds, you can select the language you want while playing the DVD
With multiplex CDs or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers.

SUBTITLE **(DVD only) (page 33)**
With DVDs on which multilingual subtitles are recorded, you can change the subtitle language whenever you want while playing the DVD, and turn it on or off whenever you want.

ANGLE **(DVD only) (page 33)**
With DVDs on which various angles (multi-angles) are recorded, you can change the angles on the scene for which multi-angles are recorded.

VIRTUAL 3D SURROUND **(page 34)**
Select the mode to enjoy multi-channel surround sound such as Dolby Digital and MPEG.
Even if you connect only front speakers, Virtual Enhanced Surround (VES) lets you enjoy 3D sound by using 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers.
When you connect 2 front speakers and 2 rear speakers, you can use the 3D sound imaging to shift the sound of the rear speakers away from the actual speaker position (VIRTUAL REAR SHIFT) or to create 3 sets of virtual rear speakers from 1 set of actual rear speakers (VIRTUAL MULTI REAR).
You can feel the more effective 3D sound when you connect a receiver (amplifier) with 5.1 channel inputs, 2 front speakers, 2 rear speakers, 1 center speaker and 1 subwoofer.

PROGRAM **(page 36)**
You can play the contents of the disc in the order you want by arranging the order of the titles, chapters or tracks on the disc to create your own program.

SHUFFLE **(page 38)**
You can have the player "shuffle" titles, chapters or tracks and play them in a random order. The playing order may differ from the previous "shuffling."

REPEAT **(page 39)**
You can play all the titles/tracks on a disc or a single title/chapter/track repeatedly.

A-B REPEAT **(page 40)**
You can play a specific portion of a title, chapter, or track repeatedly.

ADVANCED **(DVD only) (page 41)**
You can check the play information about the bit rate, bit rate history or the position where the disc is played (layer).

DNR **(DVD/VIDEO CD only) (page 43)**
You can make the picture clearer by reducing the picture noise (the afterimages that appear on the screen).

VIDEO EQ **(DVD/VIDEO CD only) (page 43)**
You can adjust the video output of the DVD or VIDEO CD from the player, not from the TV, to obtain the picture quality you want.

ANGLE VIEWER **(DVD only) (page 45)**
With DVDs on which various angles (multi-angles) for a scene are recorded, you can display all the angles recorded on the disc on the same screen, and start playback in continuous mode at the chosen angle directly.

STROBE PLAYBACK **(DVD/VIDEO CD only) (page 45)**
You can display 9 consecutive sections of the disc on the screen. In this case, the sections show still images.

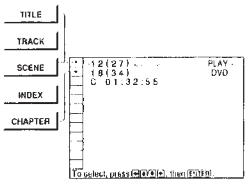
TITLE VIEWER **(DVD only) (page 46)**
CHAPTER VIEWER **(DVD only) (page 46)**
TRACK VIEWER **(VIDEO CD only) (page 46)**
You can check the titles, chapters and tracks of the disc on the screen divided in 9 sections, and start playback from the chosen title, chapter or track.

BOOKMARK **(DVD/VIDEO CD only) (page 46)**
You can have the player store specific portions of the disc in memory and play them immediately whenever you want without the need to search.

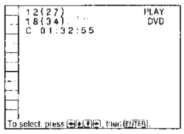
Searching for the Title/Chapter/Track/Index/Scene

DVD VIDEO CD CD

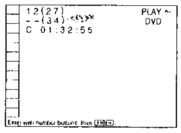
You can search by selecting the title/chapter/track/index/scene.
Select "TITLE," " CHAPTER," " TRACK", "INDEX" or "SCENE" after pressing DISPLAY.
When you play back a DVD, "TITLE" and " CHAPTER" are displayed.
When you play back a VIDEO CD/CD, "TRACK" and "INDEX" are displayed. When you play back a VIDEO CD with PBC functions, "SCENE" is displayed.



1 **Select "TITLE," "CHAPTER," "TRACK," "INDEX" or "SCENE" using ↑/↓.**
"✻✻ (✻✻)" is highlighted. (✻✻ means optional number in this manual.) Number in parentheses indicate the total number of titles, chapters, tracks, indexes or scenes.



2 **Press ➡ or ENTER.**
"✻✻ (✻✻)" is changed to "-- (✻✻)".



3 **Select the number of the title, chapter, track, index or scene you want to search for using the number buttons, then press ENTER.**
The player starts searching. To cancel the number, press CLEAR before pressing ENTER.

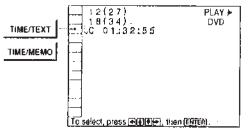
To cancel selecting
Press ⤺RETURN.

Notes
- The number of titles, chapters or tracks displayed is that of the titles, chapters or tracks recorded on a disc.
- The index numbers are not displayed during PBC playback of VIDEO CDs.

Checking the Playing Time and Remaining Time

DVD VIDEO CD CD

You can check the playing time and remaining time of the current title/chapter/track and the total remaining time of the disc.
Press DISPLAY. Then press TIME/TEXT on the remote to change the time information.
You can also check the DVD TEXT, CD TEXT and Disc Memo, and label the Disc Memo. See page 29.



When playing a DVD
■TIME/TEXT or TIME/MEMO
- C ✻✻:✻✻:✻✻ : Playing time of the current chapter
- C–✻✻:✻✻:✻✻ : Remaining time of the current chapter
- T ✻✻:✻✻:✻✻ : Playing time of the current title
- T–✻✻:✻✻:✻✻ : Remaining time of the current title

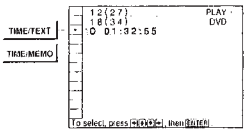
When playing a VIDEO CD (during PBC playback)
■TIME/MEMO
- ✻✻:✻✻ : Playing time of the current scene

When playing a VIDEO CD (in continuous play) or CD
■TIME/TEXT or TIME/MEMO
- T ✻✻:✻✻ : Playing time of the current track
- T–✻✻:✻✻ : Remaining time of the current track
- D ✻✻:✻✻ : Playing time of the current disc
- D–✻✻:✻✻ : Remaining time of the current disc

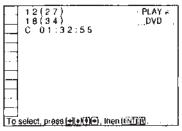
You can display "TIME/TEXT" or "TIME/MEMO" display using the remote
Press TIME/TEXT on the remote. Each time you press the button, the time information changes.

Selecting a Start Point Using the Time Code DVD

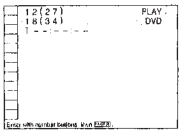
You can search by inputting the time code.
Select "TIME/TEXT" or "TIME/MEMO" after pressing DISPLAY.
The time code corresponds to the approximate actual playing time. For example, to search for a scene 2 hours 30 minutes 20 seconds past the beginning, input 2:30:20.



1 Select "C ✱✱:✱✱:✱✱" (playing time of the current chapter) when playing a DVD.



2 Press ➡ or ENTER.
Time code changes to "T– – : – – : – –".



3 Input the time code using the number buttons, then press ENTER.
The player starts searching. To cancel the number, press CLEAR before pressing ENTER.

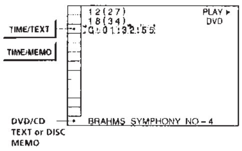
To cancel inputting
Press ↶RETURN.

You can display "TIME/TEXT" or "TIME/MEMO" display using the remote
Press TIME/TEXT on the remote.

Note
When you input the time code, input the playing time of the title

Checking the Information of the Disc DVD VIDEO CD CD

You can check the DVD TEXT or CD TEXT of the disc on the TV screen and the front panel display. When the disc is a VIDEO CD or the DVD TEXT or CD TEXT is not recorded on the disc, you can label the disc as a Disc Memo and then check it.
DVD TEXT and CD TEXT are information recorded on the disc which you cannot change
Press DISPLAY. If the disc has DVD TEXT or CD TEXT recorded, "TIME/TEXT" appears. If a Disc Memo can be input in the disc, "TIME/MEMO appears. Press TIME/TEXT on the remote until DVD/CD TEXT or Disc Memo is displayed.
The information is displayed at the bottom of the display.



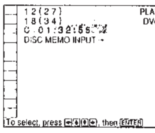
You can display "TIME/TEXT" or "TIME/MEMO" display using the remote
Press TIME/TEXT on the remote. To display DVD/CD TEXT or Disc Memo, press TIME/TEXT until DVD/CD TEXT or Disc Memo is displayed.

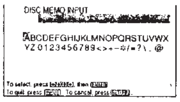
Note
The DVD TEXT only in English is displayed.

Labeling discs (Disc Memo)

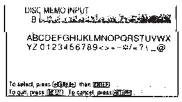
When the DVD TEXT or CD TEXT is not recorded on the disc, you can change the name of the disc by labeling it on the on-screen display and put a personal title on the disc.
You can input up to 20 characters per disc each.
You can also have the player display the Disc Memo each time you select the disc. The Disc Memo can be anything you like, such as a title, musician's name, category or date of purchase.

1 Select "DISC MEMO INPUT➡" in "TIME/MEMO".
The DISC MEMO INPUT display appears.

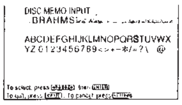




2 Select the character by pressing ←/↑/↓/→ or by turning the click shuttle.
The selected character changes color.

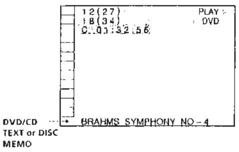


3 Press ENTER.



4 Repeat steps 2 and 3 to input other characters.

5 When you have entered all the characters for the disc label, press INPUT on the remote.
The disc label is stored.



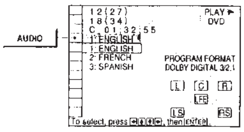
To correct the characters
- To erase the characters:
  1. Move the cursor to the character you want to erase by pressing ⏮/⏭.
  2. Press CLEAR.
- To insert or overwrite the characters:
  1. Move the cursor to the character you want to correct by pressing ⏮/⏭.
  2. Select the correct character by pressing ←/↑/↓/→ or by turning the click shuttle.
  3. To insert the character, press ENTER.
     To overwrite, don't press ENTER but move the cursor by pressing ⏭.

You can display the Disc Memo input display using the remote
Press INPUT on the remote.

Note
You can label up to 200 discs. When you have the player store over 200 discs in memory, each new Disc Memo erases the oldest Disc Memo from those first stored.

Changing the Sounds DVD VIDEO CD CD

With DVDs recorded with multilingual sounds, you can select the language you want while playing the DVD.
With multiplex CDs or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. In this case, the sound loses the stereo effect. For example, with a disc containing a song, the right channel may output the vocals and the left channel may output the instrumental. If you only want to hear the instrumental, you can select the left channel and hear it from both speakers.
Select "AUDIO" after pressing DISPLAY.



■AUDIO

When playing a DVD
Select the language. The languages you can select are different depending on the DVD. When 4 digits are displayed, they represent the language code. Select the language code from the list on page 82.

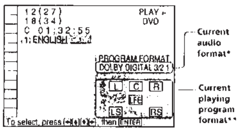
When playing a VIDEO CD or a CD
- STEREO : The standard stereo sound
- 1/L : The sound of the left channel (monaural)
- 2/R : The sound of the right channel (monaural)

You can display "AUDIO" display using the remote
Press AUDIO on the remote.

Notes
- Depending on the DVD, you may not be able to change the languages even if multilingual sounds are recorded on the DVD.
- While playing the CD/VIDEO CD, the standard stereo playback will be resumed when:
  - you open or close the disc tray
  - you turn the power off
- While playing the DVD, the sound may be changed when:
  - you open or close the disc tray
  - you change the title
- If the language is displayed as a 4 digit number, refer to the language code list on page 82.

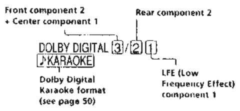
Displaying the audio information of the disc DVD

When you select "AUDIO," the playing channels are displayed on the screen.
In Dolby Digital format, the signals from monaural to 5.1 channels can be recorded on a DVD. Depending on the DVD the number of the recorded channels may be different.



* "PCM," "DTS,""DOLBY DIGITAL" or "MPEG" is displayed. In "DOLBY DIGITAL" case, the channels in the playing track are displayed by number as follows:

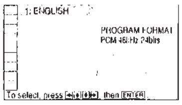
The case of Dolby Digital 5.1 ch:



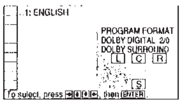
** The letters in the program format display mean the following.
- L: Front (L)
- R: Front (R)
- C: Center (monaural)
- LS: Rear (L)
- RS: Rear (R)
- S: Rear (monaural) – the rear component of the Dolby Surround processed stereo signal and the Dolby Digital signal.
- LFE: LFE (Low Frequency Effects)

The display examples are as follows:

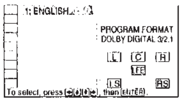
•PCM (stereo)



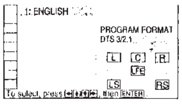
•Dolby Surround



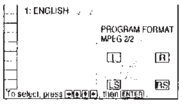
•Dolby Digital 5.1ch



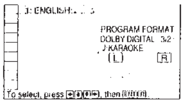
•DTS



•MPEG



•Dolby Digital Karaoke format
(For details, see page 50.)

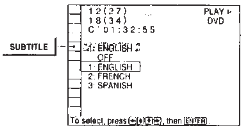


You can find Dolby Surround-encoded software by looking at the packaging
Use discs with the logo. In order to enjoy Dolby Digital playback, you must use discs bearing this logo.

Displaying the Subtitles

DVD

With DVDs on which subtitles are recorded, you can turn the subtitles on and off whenever you want while playing the DVD.
With DVDs on which multilingual subtitles are recorded, you can change the subtitle language whenever you want while playing the DVD, and turn it on or off whenever you want. For example, you can select the language you want to master and turn the subtitles on for better understanding.
Select "SUBTITLE" after pressing DISPLAY.



■SUBTITLE
Select the language. The languages you can select are different depending on the DVD. When 4 digits are displayed, they indicate the language code. Select the language code from the list on page 82.

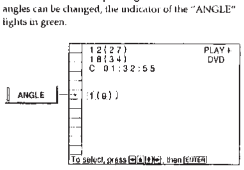
You can display the "SUBTITLE" display by using the remote
Press SUBTITLE on the remote. Each time you press the button, the item changes.

Notes
- When playing a DVD on which no subtitles are recorded, no subtitles appear.
- Depending on the DVD, you may not be able to turn the subtitles on even if they are recorded on it.
- Depending on the DVD, you may not be able to turn the subtitles off.
- If the language is displayed as a 4-digit number, refer to the language code list on page 82.
- The type and number of languages for subtitles vary from disc to disc.
- Depending on the DVD, you may not be able to change the subtitles even if multilingual subtitles are recorded on it.
- While playing the DVD, the subtitle may change when:
  - you open or close the disc tray
  - you change the title

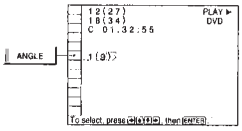
Changing the Angles

DVD

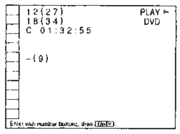
With DVDs on which various angles (multi-angles) for a scene are recorded, you can change the angles. For example, while playing a scene of a train in motion, you can display the view from either the front of the train, the left window of the train or from the right window without having the train's movement interrupted.
Select "ANGLE" after pressing DISPLAY. When the angles can be changed, the indicator of the "ANGLE" lights in green.



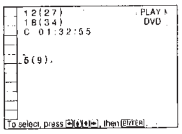
1 Select "ANGLE."



2 Press ➡.
The number of the angle changes to "-." The number in parentheses indicates the total number of angles.



3 Select the number of the angles using the number buttons or ⬆/⬇, then press ENTER.
The angle is changed to the selected angle.



Notes
- The number of angles varies from disc to disc or from scene to scene. The number of angles that can be changed on a scene is that of angles recorded for that scene.
- Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

You can specify the angle beforehand
Specify the angle when "ANGLE" is not displayed on the front panel display. When a scene on which multi-angles are recorded comes, the angle is automatically selected.

You can select the angle using the remote
Press ANGLE on the remote. Each time you press the button, the angle changes.

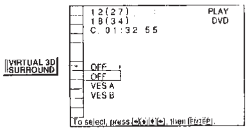
You can display different angles simultaneously (ANGLE VIEWER)
You can display all the angles recorded on the disc on the same screen, and start playback in continuous mode from the chosen angle directly. The angles are displayed on a screen divided in 9 sections. For details, see page 45.

Setting for Digital Cinema Sound

DVD VIDEO CD CD

Select the mode to enjoy multi channel surround sound such as Dolby Digital and MPEG.
Even if you connect only front speakers, Virtual Enhanced Surround lets you enjoy 3D sound by using 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers.
When you connect 2 front speakers and 2 rear speakers, use 3D sound imaging to shift the sound of the rear speakers away from the actual speaker position (VIRTUAL REAR SHIFT) or to create 3 sets of virtual rear speakers from 1 set of actual rear speakers (VIRTUAL MULTI REAR).
You can feel the more effective 3D sound when you connect a receiver (amplifier) with 5.1 channel inputs, 2 front speakers, 2 rear speakers, 1 center speaker and 1 subwoofer.
Select "VIRTUAL 3D SURROUND" after pressing DISPLAY. When you select the item except "OFF," the indicator of the "VIRTUAL 3D SURROUND" lights in green.

Note
To enjoy the original Dolby Digital sound through the 5.1CH OUTPUT connectors, set each speaker position or distance, etc. For details on setting each speaker, see page 71.



■VIRTUAL 3D SURROUND
Select the desired item. For details on each item, see "Effects of each item."
- OFF
- VES A*
- VES B*
- NORMAL SURROUND
- ENHANCED SURROUND
- VIRTUAL REAR SHIFT
- VIRTUAL MULTI REAR

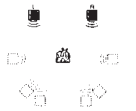
* These settings also effect the output from the LINE OUT (AUDIO 1, 2) connectors.

Note
The items displayed are different depending on the settings of "SPEAKER SETUP" (page 71).
You can select only "OFF," "VES A" or "VES B" when you play back a DVD and set "NONE" in "REAR" in "SIZE" under "SPEAKER SETUP" in the set up display.

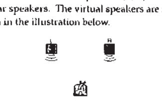
Effects of each item

OFF
Outputs all channel signals recorded on the disc. For example, outputs 2-channel signals for stereo sound of the CD or 5-channel signals for Dolby Digital sound of the DVD. When you connect fewer than 5 (+1) speakers, the player distributes the output signal for the missing speaker to other speakers appropriately.

VES (Virtual Enhanced Surround) A
Uses 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below.



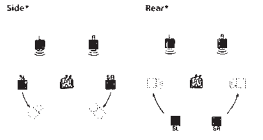
VES (Virtual Enhanced Surround) B
Uses 3D sound imaging to create virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below.



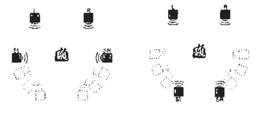
NORMAL SURROUND
Software with 2 channel audio signals, is decoded with Dolby Pro Logic to create surround effects.

ENHANCED SURROUND
Provides a greater sense of presence from Pro Logic source with monaural rear channel sound. Produces a stereo like effect in the rear channels.

VIRTUAL REAR SHIFT
Uses 3D sound imaging to shift the sound of the rear speakers away from the actual speaker position. The virtual speakers are reproduced as shown in the illustration below. The shift position differs according to the setting of the rear speaker position.



VIRTUAL MULTI REAR
Uses 3D sound imaging to create an array of virtual rear speakers from a single pair of actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. The position of the virtual rear speakers differs according to the setting of the rear speaker position.



* See page 71 for details on how to set the rear speaker position.

L: Front speaker (left)
R: Front speaker (right)
SL: Rear speaker (left)
SR: Rear speaker (right)
⬚: Virtual speaker

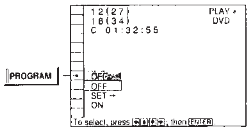
Notes
- Some discs do not have rear sound. In this case, you cannot get the 3D surround effect.
- When you select an item, the sound cuts off for a moment.
- When the playing signal does not contain the surround component, the effects may be difficult to hear even if you select "VES A" or "VES B."
- If you connect the front speakers only, "NORMAL SURROUND," "ENHANCED SURROUND," "VIRTUAL REAR SHIFT" and "VIRTUAL MULTI REAR" cannot be selected.
- The sound does not come from the rear speakers when you set "VIRTUAL 3D SURROUND" to "VES A" or "VES B" in the Control Menu display even if you have connected rear speakers.
- Set the front speakers to form an equilateral triangle including the listening position, or the effects may be difficult to hear even if you select "VES A" or "VES B."
- In case that the player outputs the signal from DIGITAL OUT (OPTICAL, COAXIAL), the surround effect will be heard only when you set "DOLBY DIGITAL" to "D-PCM," and "MPEG" to "PCM" in "AUDIO SETUP."
- When you play sound tracks with 96 kHz sampling frequency, be sure to select "OFF," or the output signals will be converted to 48 kHz (sampling frequency). (Except when the player outputs the audio signal from DIGITAL OUT (OPTICAL, COAXIAL))
- When you connect a center speaker and a subwoofer, you can also hear the sound from the center speaker and the subwoofer When you select "VES A" or "VES B," the player does not output the sound from the center speaker.
- When you select "VES A" or "VES B," set the surround settings of the connected units such as the amplifier to OFF.

You can select the item of "VIRTUAL 3D SURROUND" using this button
Press VIRTUAL 3D SURROUND on the player. Each time you press the button, the item changes.

Creating Your Own Program (Program Play)

DVD VIDEO CD CD

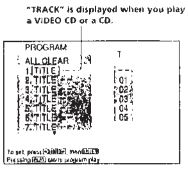
You can play the contents of the disc in the order you want by arranging the order of the titles, chapters or tracks on the disc and create your own program. One program can be restored in the player and contain up to 99 titles, chapters and tracks.
Select "PROGRAM" after pressing DISPLAY. When you select "ON", the indicator of the "PROGRAM" lights in green.



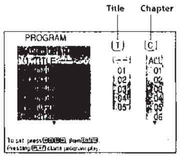
■PROGRAM
- OFF: plays normal.
- SET➡: allows you to create your own program.
- ON: plays Program Play.

Creating the program

1 Select "SET➡" in "PROGRAM".
The programming display appears.

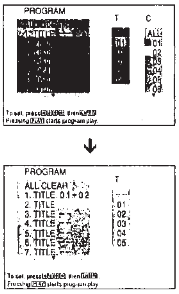


2 Press ➡.
"01" is highlighted. It is ready to set the first title or track for program.

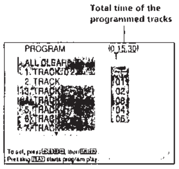


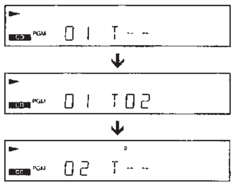
3 Select the title, chapter or track you want to program using ⬆/⬇, then press ENTER.
For example, select title or track 2.
(You can also use the number buttons and ENTER button to select. In this case, the selected number is displayed on the screen.)

■When playing a DVD
When both titles and chapters are recorded on the disc, select the title, then the chapter.



■When playing a VIDEO CD or CD
Select the track you want to program.





4 To program other titles, chapters or tracks, repeat Step 3.
The programmed titles, chapters or tracks are displayed from 2 in order.

5 Press ▷ to start Program Play.

To cancel Program Play
Press CLEAR on the remote.

To cancel programming
Press PROGRAM on the remote.

To change programming
1 In Step 2, select the program number of the title, chapter or track you want to change using ⬆/⬇.
2 Follow Step 3 for new programming.

To cancel the programmed order
To cancel all the titles, chapters or tracks in the programmed order, select "ALL CLEAR" in Step 2.
To cancel the selected program, select the program using ⬆/⬇ in Step 2 then press CLEAR, or select "- -" in Step 3 then press ENTER.

The program remains even after the Program Play ends
When you press ▷, you can play the same program again.

You can do Repeat Play or Shuffle Play of the programmed titles, chapters or tracks
During Program Play, press REPEAT or SHUFFLE. Or set "REPEAT" or "SHUFFLE" to "ON" in the Control Menu display.

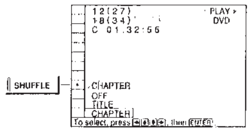
You can display "PROGRAM" display using the remote
Press PROGRAM on the remote.

Notes
- The number of titles, chapters or tracks displayed are that of the titles, chapters or tracks recorded on a disc.
- The program is canceled when:
  - you open or close the disc tray
  - you turn the power off
- You may not be able to do Program Play depending on the DVD.
- While you are doing PBC playback, you cannot set a program unless you stop playback once.

Playing in Random Order (Shuffle Play)

DVD VIDEO CD CD

You can have the player "shuffle" titles or tracks and play them in a random order. The playing order may differ from the previous "shuffling."
Select "SHUFFLE" after pressing DISPLAY. When you select "ON", the indicator of the "SHUFFLE" lights in green.



■SHUFFLE
Selects the setting of Shuffle Play.

When playing a DVD and when Program Play is set to OFF
- OFF: does not play a disc in random order.
- TITLE: has the player "shuffle" titles and play in a random order.
- CHAPTER: has the player "shuffle" chapters and play in a random order.

When playing a VIDEO CD, CD or DVD (when Program Play is set to ON)
- OFF: does not play a disc in random order.
- ON: has the player "shuffle" titles or tracks and play in a random order.

When playing a VIDEO CD or CD (when Program Play is set to OFF)
- OFF: does not play a disc in random order.
- TRACK: has the player "shuffle" tracks and play in a random order.

To cancel Shuffle Play
Press CLEAR on the remote.

You can set Shuffle Play during stop
After selecting the item of "SHUFFLE", press ▷.
The player starts Shuffle Play.

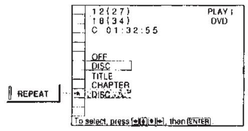
You can display the "SHUFFLE" display using the remote
Press SHUFFLE on the remote

Notes
- Shuffle Play is canceled when:
  - you open or close the disc tray
  - you turn the power off
- You may not be able to do Shuffle Play depending on the DVD.
- Up to 200 chapters in a disc can be played in a random order when "CHAPTER" is selected

Playing Repeatedly (Repeat Play)

DVD VIDEO CD CD

You can play all the titles/tracks on a disc or a single title/chapter/track.
In Shuffle or Program Play mode, the player repeats the titles or tracks in the shuffled or programmed order.
You cannot do Repeat Play during PBC playback of VIDEO CDs (page 20).
You may not be able to do Repeat Play depending on the DVD.
Select "REPEAT" after pressing DISPLAY. When you do not select "OFF," the indicator of the "REPEAT" lights in green.



■REPEAT
Selects the setting of Repeat Play.
When playing a DVD and when Program Play and Shuffle Play are set to OFF
- OFF: does not play repeatedly.
- DISC: repeats all the titles.
- TITLE: repeats the current title on a disc.
- CHAPTER: repeats the current chapter.

When playing a VIDEO CD/CD and when Program Play and Shuffle Play are set to OFF
- OFF: does not play repeatedly.
- DISC: repeats all the tracks on a disc.
- TRACK: repeats the current track.

When Program Play or Shuffle Play is set to ON
- OFF: does not play repeatedly.
- ON: repeats Program Play or Shuffle Play.

To cancel Repeat Play
Press CLEAR on the remote.

You can set Repeat Play during stop
After selecting the item of "REPEAT", press ▷.
The player starts Repeat Play.

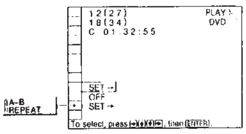
You can display the "REPEAT" display using the remote
Press REPEAT on the remote.

Note
Repeat play is canceled when you turn the power off.

Repeating a Specific Portion (A←→B Repeat)

DVD VIDEO CD CD

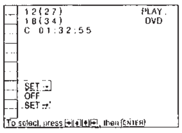
You can play a specific portion of a title, chapter, track repeatedly. This is useful when you want to memorize lyrics.
During PBC Playback of VIDEO CDs (page 20), this function is available only while playing moving pictures.
You may not be able to do A←→B Repeat Play depending on the DVD.
Select "A-B REPEAT" after pressing DISPLAY. During A←→B Repeat Play, the indicator of the "A-B REPEAT" lights in green.

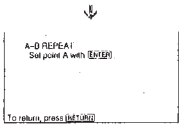


■A-B REPEAT
- SET→: sets the A and B points.
- OFF: does not play a specific portion of a title/chapter/track repeatedly.

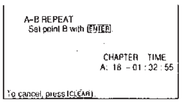
Setting a portion for A←→B repeat

1 Select "SET→" in "A-B REPEAT."
The A←→B REPEAT setting display appears.

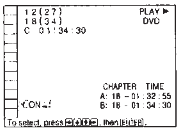




2 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press ENTER.
The starting point (point A) is set



3 When you reach the ending point (point B), press ENTER again.
The setting points are displayed and the player starts repeating this specific portion.
"A-B" appears on the front panel display during A←→B repeat play.



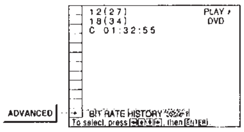
To cancel A←→B Repeat Play
Press CLEAR on the remote.

Notes
- You can set A←→B Repeat on only one specific portion.
- A←→B Repeat is canceled when:
  – you open or close the disc tray
  – you turn the power off
- When you set A←→B Repeat, the settings for Shuffle Play and Program Play are canceled.
- You may not be able to set A←→B Repeat, depending on the scene of the DVD or the VIDEO CD.

Checking the Play Information

DVD

You can check the play information about the bit rate, bit rate history or the position where the disc is played (layer).
While playing a disc, the approximate bit rate of the playback picture is always displayed by Mbps (Mega bit per second) and the audio by Kbps (Kilo bit per second).
Select "ADVANCED" after pressing DISPLAY.

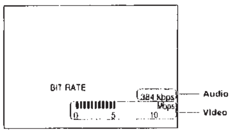


■ADVANCED
- BIT RATE: displays bit rate.
- BIT RATE HISTORY: displays bit rate and bit rate history.
- LAYER: displays layer and the point picked up.
- OFF: turns off ADVANCED display.

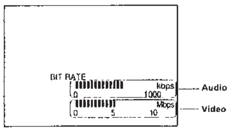
You can display the ADVANCED display directly
Press DISPLAY until the the ADVANCED display appears.

Displays of each item

BIT RATE

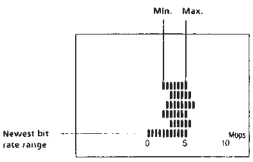


When you play MPEG AUDIO sound tracks



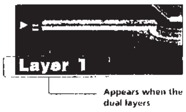
Bit rate refers to the amount of video/audio data per second in a disc. The higher the bit rate is, the larger the amount of data. When the bit rate level is high, there is a large amount of data. However, this does not always mean that you can get higher quality pictures or sounds.

BIT RATE HISTORY



Indicates the transition of bit rate of the playback picture for a period up to the present.

LAYER

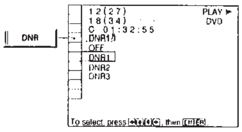


Indicates the approximate point where the disc is playing. If it is a dual-layer DVD, the player indicates which layer is being read.
For details on the layers, see page 80.

Reducing the Picture Noise (DNR: Digital Video Noise Reduction)

DVD VIDEO CD

You can make the picture clearer by reducing the picture noise of the background.
Select "DNR" after pressing DISPLAY.
When you select "DNR1," "DNR2," or "DNR3," the indicator of the "DNR" lights in green.



■DNR
As the value increases, the picture noise will be reduced. However, afterimages may increase.
- OFF: turns off the DNR function
- DNR1
- DNR2
- DNR3

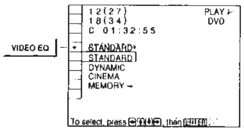
You can display the "DNR" display by using the remote
Press DNR on the remote. Each time you press the button, the item changes.

Notes
- Depending on the disc, the effect may be difficult to tell.
- If the afterimages appear on the TV screen, set the noise reduction function to off on your TV. Then set "DNR" to "OFF" on the Control Menu display.

Adjustments for Playback Picture (VIDEO EQ: Video Equalizer)

DVD VIDEO CD

You can adjust the video output of the DVD or VIDEO CD from the player, not from the TV, to obtain the picture quality you want. Choose one of the video modes whichever best suits the program you are watching.
When you select "MEMORY→" in a menu item, adjust the value.
Select "VIDEO EQ" after pressing DISPLAY.



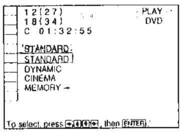
■VIDEO EQ
Selects the setting of video control.
- STANDARD: displays a standard picture
- DYNAMIC: emphasizes the black level and so produces a bolder dynamic picture
- CINEMA: displays the picture with soft focus
- MEMORY→: adjusts the picture items

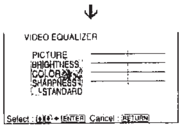
To adjust the picture items

You can adjust the following picture items individually.
- PICTURE
- BRIGHTNESS
- COLOR
- SHARPNESS

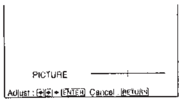
Adjustments for Playback Picture (VIDEO EQ)

1 Select "MEMORY➡" in "VIDEO EQ."
The video control display appears.

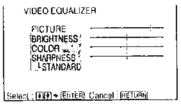




2 Select the picture item you want to adjust using ⬆/⬇, then press ENTER.
The adjustment bar of the selected item appears.
To cancel adjusting the picture halfway, press ↶RETURN.



3 Adjust the selected picture item using ⬅/➡, then press ENTER.
The setting is stored in memory.



4 To adjust other items, repeat Steps 2 and 3.

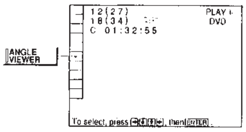
To exit the video control display
Press ↶RETURN.

To reset the picture items
Select "STANDARD" in "MEMORY➡."

Note
Only one setting of the picture items you adjusted in "MEMORY➡" can be stored. When you adjust the items, new setting erases the setting adjusted before.

Displaying Different Angles Simultaneously [i] DVD

With DVDs on which various angles (multi-angles) for a scene are recorded, you can display all the angles recorded on the disc on the same screen, and start playback in continuous mode at the chosen angle directly. The angles are displayed on a screen divided in 9 sections. Select "ANGLE VIEWER" after pressing DISPLAY. When you can select "ANGLE VIEWER", the indicator of the "ANGLE VIEWER" lights in green.



To select the one angle
Select the angle using ⬅/⬆/⬇/➡, then press ENTER. The selected angle only is displayed.

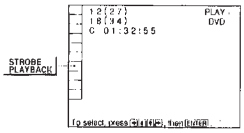
To cancel displaying multi-angles
Press ↶RETURN.

You can check the number on the front panel display
The number of the angle you select is displayed on the front panel display.

Notes
- Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.
- When a scene for which various angles (multi-angles) are not recorded comes while displaying different angles simultaneously, the player returns to the normal play.

Dividing a Track into 9 Sections (Strobe Play) [i] DVD VIDEO CD

You can display 9 consecutive sections of the disc on the screen. In this case, the sections show still images.
Select "STROBE PLAYBACK" after pressing DISPLAY.



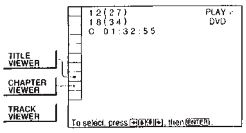
To cancel watching the strobe play
Press ↶RETURN.

During pause mode, 9 still images around the pause position are displayed
It is convenient to see the still images around the specific portion.

Note
Depending on the disc, there are some scenes you may not be able to watch with the strobe play.

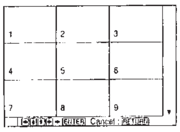
Scanning the Title, Chapter and Track [i] DVD VIDEO CD

You can check the top picture of titles, chapters and tracks of the disc on a screen divided in 9 sections, and start playback from the chosen title ,chapter or track.
Select "TITLE VIEWER"(DVD only), "CHAPTER VIEWER"(DVD only) or "TRACK VIEWER"(VIDEO CD only) after pressing DISPLAY.



To start playback from the selected picture
Select the picture using ⬅/⬆/⬇/➡, then press ENTER. The playback starts from the selected picture.

When there are over 9 titles or chapters
▼ appears at the right bottom of the screen. Select the right bottom scene (the position of 9) and use ⬇ to display next titles, tracks or chapters. To return to the previous scene, select the left top scene (the position of 1) and press ⬆.



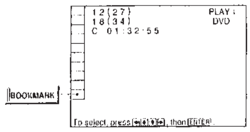
You can check the number on the front panel display
The number of the title, chapter and track you select is displayed on the front panel display.

To cancel scanning the title, chapter and track
Press ↶RETURN.

Notes
- Depending on the disc, you may not be able to scan the title, chapter and track.
- You cannot scan the track on a VIDEO CD during PBC playback.

Setting and Selecting Favorite Scene (Bookmark) [i] DVD VIDEO CD

You can have the player store specific portions of the disc in memory and play them immediately whenever you want without the need to search (Bookmark). Up to 9 bookmarks per disc for up to 200 discs can be stored in memory.
Select "BOOKMARK" after pressing DISPLAY. When you play the disc which has bookmarks, the indicator of the "BOOKMARK" lights in green.



To start playback from the selected picture
Select the picture using ⬅/⬆/⬇/➡, then press ENTER. The playback starts from the selected picture.

To cancel scanning the bookmark pictures
Press ↶RETURN.

To reset the bookmark
Select the the point on which you want to reset the bookmark using ⬅/⬆/⬇/➡, then press CLEAR.

To reset the all bookmarks of the player
Select "BOOKMARK RESET➡" under the "CUSTOM SETUP" in the setup display. For details on resetting all the bookmark of the player, see page 65.

Setting the bookmark

During playback, when you find the scene to be bookmarked, press BOOK MARK on the remote.
The bookmark is set.

Notes
- The player can store in memory the bookmarks of up to 200 discs. When you have the player store over 200 discs in memory, each new bookmark erases the bookmark from those first stored.
- You may not set the bookmark depending on the discs.

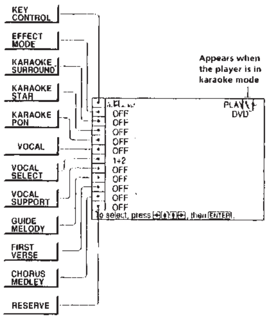
Using the Karaoke Control Menu [i] DVD VIDEO CD CD

You can use the Karaoke Control Menu when the player is in karaoke mode. Using the Karaoke Control Menu, you can enjoy karaoke by changing the key, applying the effect, reserving next titles and tracks, etc. You can also enjoy karaoke with any stereo disc.
For details about each Karaoke Control Menu item, see pages 49 to 58.

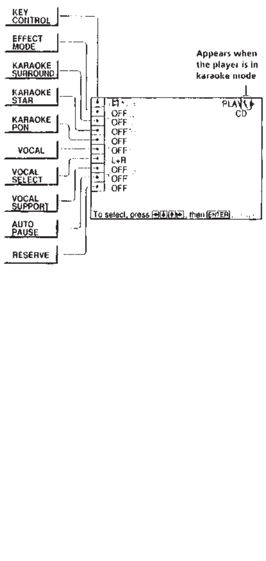
Displaying the Karaoke Control Menu

The player enters karaoke mode when a microphone is plugged into MIC 1 or 2 connector. You may also set the player to karaoke mode by pressing KARAOKE MODE on the remote.
Press DISPLAY until the Karaoke Control Menu is displayed.
The Karaoke Control Menu operations are same as that of the Control Menu. Use ⬆/⬇ to select item you want, then press ENTER. For details about the Control Menu operations, see "Using the Control Menu Display" on page 23.

When playing a DVD



When playing a VIDEO CD or CD



KEY CONTROL **(page 51)**
You can change the key to suit your vocal range.

EFFECT MODE **(page 55)**
You can insert applause with or without cheers while playing the disc.

KARAOKE SURROUND **(page 55)**
The karaoke surround effect will make the accompaniment sound mellower.

KARAOKE STAR **(page 57)**
If you feel that your voice lacks depth, use the Karaoke Star function.

KARAOKE PON **(page 57)**
You can enjoy karaoke with a stereo-recorded disc, even if it is a non-karaoke disc, by reducing the vocal.

VOCAL **(page 52)**
You can turn on and off the vocal.

VOCAL SELECT **(page 53)**
You can select the vocal recorded in the disc.

VOCAL SUPPORT **(page 53)**
If you cannot sing the part, you can play the recorded vocal instead.

GUIDE MELODY **(DVD only) (page 51)**
You can listen to the guide melody to be sung.

FIRST VERSE **(DVD only) (page 58)**
You can play only the first verse of the title.

CHORUS MEDLEY **(DVD only) (page 58)**
You can play the chorus part of all titles in the disc sequentially.

AUTO PAUSE **(VIDEO CD/CD only) (page 54)**
You can set the player to pause every time a song is played.

RESERVE **(page 56)**
You can select and reserve up to 24 titles/tracks when the player is in karaoke mode. You can reserve additional titles/tracks even if somebody is performing karaoke.

Using Various Functions with the Control Menu

Enjoying Karaoke

This chapter describes how to play discs in karaoke mode and how to use various features to enjoy karaoke.

Using Karaoke

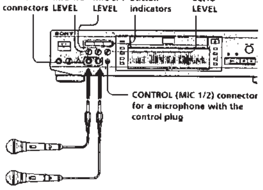
DVD VIDEO CD CD

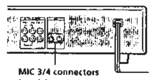
You can enjoy karaoke (singing along with a disc) by setting this player to karaoke mode. You can connect up to four microphones to the player. In karaoke mode, use the RMT-D110E remote which has the karaoke function buttons.

Setting the player to karaoke mode

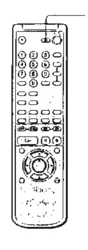
The player enters karaoke mode when a microphone is plugged into MIC 1 or 2 connector.
The player exits from karaoke mode when you disconnect the microphones from both of the MIC 1 and 2 connectors. You may also switch karaoke mode on or off by pressing KARAOKE MODE on the remote. The KEY CONTROL button indicators on the player light in karaoke mode.

Notes on karaoke mode
- You cannot use the following functions in karaoke mode
  - Dolby Digital surround using the 5.1CH OUTPUT connectors.
  - Program Play
- The VIRTUAL 3D SURROUND setting has no effect in karaoke mode.
- The sound tracks with 96 kHz (PCM) sampling frequency are converted to 48 kHz (sampling frequency) in karaoke mode.





Enjoying Karaoke



Adjusting the microphone

1. **Set the MIC (1/3 or 2/4) LEVEL control of the MIC connector to MIN.**
2. **Plug a microphone (not supplied) into the MIC connector.**
   When a microphone is connected to the MIC 1 or 2 connector, the player enters karaoke mode.
3. **Set the ON/OFF switch on the microphone to ON and turn the MIC (1/3 or 2/4) LEVEL control to adjust the microphone volume.**
4. **Turn the ECHO LEVEL control to adjust the echo.**
   The same echo level is applied to all microphones connected.

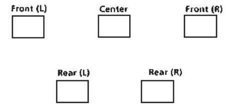
If howling occurs
- Move the microphone away from the speakers.
- Lower the microphone volume or echo level.
- Lower the overall volume.

Notes
- The sound input from the microphone is not output from the DIGITAL OUT (OPTICAL, COAXIAL) connectors.
- You can turn karaoke mode off even when a microphone is connected to the MIC 1 or 2 connector by pressing KARAOKE MODE on the remote. You can continue using the microphone, however, the echo function and the ECHO LEVEL control do not work.

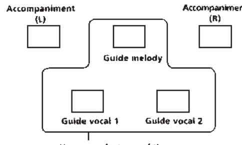
Dolby Digital Karaoke format DVD

Dolby Digital format, which reproduces surround sound using 5 channels, contains the "Dolby Digital Karaoke" format specialized for karaoke. In the Dolby Digital Karaoke format discs, guide melody and guide vocal are recorded besides the accompaniment so that you can select them when the player is in karaoke mode.

Speaker output in normal Dolby Digital format (5 channel surround)



Speaker output in Dolby Digital Karaoke format



You can check the audio information using "AUDIO" in the Control Menu display. When playing a Dolby Digital Karaoke disc, "♪KARAOKE" appears at the current audio format. (page 31)

Example:

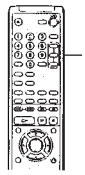
DOLBY DIGITAL 3 / 2
♪KARAOKE

2/0 : Accompaniment only is recorded.
3/0 : Recorded with guide melody.
3/1 : Recorded with guide melody and guide vocal.
3/2 : Recorded with guide melody and two kinds of guide vocals.

Enjoying Karaoke

Changing the Key (Key Control) DVD VIDEO CD CD

You can change the key to suit your vocal range.
While playing karaoke, press one of the KEY CONTROL buttons repeatedly to find the key that suits your vocal range.



Press KEY CONTROL in karaoke mode.

To	Press
raise the key	♯
lower the key	♭
return to the original key	♮

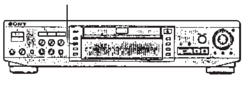
You can adjust the key in 17 steps (8 steps higher, 8 steps lower and the original key).

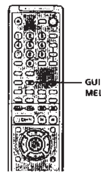
You can change the key using "KEY CONTROL" in the Karaoke Control Menu display
Select "KEY CONTROL" in the Karaoke Control Menu, change the key using ←/→, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 47.

Note
The key automatically returns to the original key when the title or track changes.

Turning the guide melody on and off (Guide Melody) DVD

You can listen to the guide melody to be sung.





Select the karaoke track of Dolby Digital format in karaoke mode, and then press GUIDE MELODY while playing a disc. To cancel the guide melody, press GUIDE MELODY again.

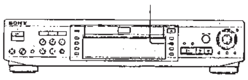
You can turn on and off the guide melody using "GUIDE MELODY" in the Karaoke Control Menu display
Select "GUIDE MELODY" in the Karaoke Control Menu, select "ON" or "OFF" using ↑/↓, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 47.

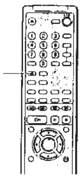
Notes
- This function works only with the Dolby Digital Karaoke format.
- If no guide melody is recorded in the disc, you cannot turn on the guide melody.

Enjoying Karaoke

Turning the vocal on and off (Vocal) DVD VIDEO CD CD

When playing a DVD with the Dolby Digital Karaoke format in karaoke mode, you can select the guide vocal to be sung recorded in the karaoke track
When playing a VIDEO CD/CD in karaoke mode, you can listen to the vocal.





When playing a DVD
You can listen to the guide vocal recorded in the karaoke track of Dolby Digital format.
Press VOCAL while playing a disc. To cancel the guide vocal, press VOCAL again.

Notes
- This function works only with the Dolby Digital Karaoke format.
- If the guide vocal is not recorded in the disc, you cannot use the Vocal function.

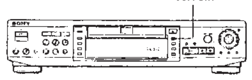
When playing a VIDEO CD or CD
When VIDEO CDs and CDs are played in karaoke mode, the audio output automatically switches so that only the left channel (accompaniment track) is played and output from both front speakers (L, R).
By pressing VOCAL while the accompaniment is played, you can listen to the vocal.

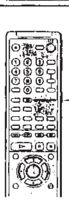
You can turn on and off the Vocal function using "VOCAL" in the Karaoke Control Menu display
Select "VOCAL" in the Karaoke Control Menu, select "ON" or "OFF" using ↑/↓, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 47.

You can select the vocal
You can select the vocal by pressing VOCAL SELECT. See "Selecting the vocal" (page 53).

Being supported by the recorded vocal (Vocal Support) DVD VIDEO CD CD

If you cannot sing the part, you can play the recorded vocal instead.





When playing a DVD
You can use the Vocal Support function while playing a DVD with the Dolby Digital Karaoke format.
Press VOCAL SUPPORT while playing a disc in karaoke mode. To cancel the Vocal Support function, press VOCAL SUPPORT again.

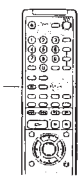
When playing a VIDEO CD or CD
Press VOCAL SUPPORT while playing a disc in karaoke mode. To cancel the Vocal Support function, press VOCAL SUPPORT again.

You can turn on and off the Vocal Support function using "VOCAL SUPPORT" in the Karaoke Control Menu display
Select "VOCAL SUPPORT" in the Karaoke Control Menu, select "ON" or "OFF" using ↑/↓, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 47.

You can select the vocal
You can select the vocal by pressing VOCAL SELECT. See "Selecting the vocal" on the right.

Selecting the vocal (Vocal Select) DVD VIDEO CD CD

You can select the vocal when using the Vocal or Vocal Support function.



When playing a DVD
During playback and press VOCAL SELECT.
Each time you press VOCAL SELECT, the guide vocal channel changes as follows:

→ 1+2 (Guide vocal 1+2)
↓
1 (Guide vocal 1)
↓
2 (Guide vocal 2)

You can use the Vocal or Vocal Support function with the selected guide vocal.

Notes
- This function works only with the Dolby Digital Karaoke format.
- Depending on the DVD, you may not be able to do the above operations.
- If only one guide vocal is recorded in the disc, you can select only "1."

When playing a VIDEO CD or CD
To select the vocal track, press VOCAL SELECT during playback.
Each time you press VOCAL SELECT, the output channel changes as follows:

→ L+R (same sound is output from both speakers)
↓
STEREO

You can use the Vocal or Vocal Support function with the selected vocal.

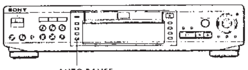
You can select the vocal using "VOCAL SELECT" in the Karaoke Control Menu display
Select "VOCAL SELECT" in the Karaoke Control Menu, select the vocal using ↑/↓, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 47.

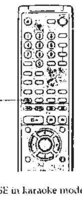
Note
If the disc is recorded with accompaniment on the right channel, you cannot hear accompaniment in karaoke mode. In this case, select "OFF" in "VOCAL" and select accompaniment channel using AUDIO on the remote. Each time you press AUDIO, the sound changes as follows:

→ L channel
↓
R channel
↓
Stereo

Pausing at the End of Each Track (Auto Pause) VIDEO CD CD

You can set the player to pause every time a track is played.





Press AUTO PAUSE in karaoke mode.

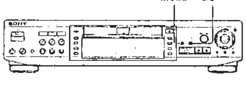
To cancel the Auto Pause function
Press AUTO PAUSE again.

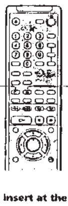
You can turn on and off the Auto Pause function using "AUTO PAUSE" in the Karaoke Control Menu display
Select "AUTO PAUSE" in the Karaoke Control Menu, select "ON" or "OFF" using ↑/↓, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 47.

Note
The Auto Pause function does not work during PBC playback of a VIDEO CD.

Inserting the applause effect (Effect Mode) DVD VIDEO CD CD

You can insert applause with or without cheers in karaoke mode.





■To automatically insert at the beginning and end of the titles and tracks
Press EFFECT MODE to select applause only or applause with cheers. (You may not be able to do this operation depending on the DVD or when doing PBC playback of the VIDEO CD.)
Each time you press EFFECT MODE, the effect changes as follows:

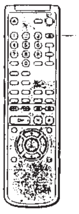
→ OFF
↓
1 (applause)
↓
2 (applause and cheers)

You can select the effect using "EFFECT MODE" in the Karaoke Control Menu display
Select "EFFECT MODE" in the Karaoke Control Menu, select the setting using ↑/↓, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 47.

■To insert whenever you want
Press EFFECT DO when you want to insert the applause effect.
You may insert applause and cheers even if EFFECT MODE is set to OFF.

Applying the surround effect (Karaoke Surround) DVD VIDEO CD CD

The karaoke surround effect will make the accompaniment sound mellower.



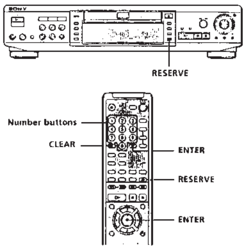
Press KARAOKE SURROUND in karaoke mode.

To cancel the karaoke surround effect
Press KARAOKE SURROUND again.

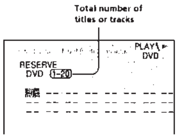
You can turn on and off the karaoke surround effect using "KARAOKE SURROUND" in the Karaoke Control Menu display
Select "KARAOKE SURROUND" in the Karaoke Control Menu, select "ON" or "OFF" using ↑/↓, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 47.

Reserving Karaoke (Reserve) DVD VIDEO CD CD

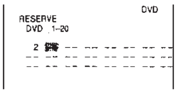
You can select and reserve up to 24 tracks/titles when the player is in karaoke mode. You can reserve additional tracks/titles even if somebody is performing karaoke. The performed track or title disappears from the display.



1 Press RESERVE in karaoke mode.
The RESERVE display appears.

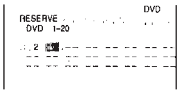


2 Input the title or track number using the number buttons, then press ENTER.



To cancel this title or track, press CLEAR.

3 To reserve other titles or tracks, repeat Step 2.



To reserve titles or tracks from another disc:
1 Press 0.
"⊚ (next disc)" appears.
2 Press ENTER.
3 Input the title or track number of the another disc.

To cancel the number, press CLEAR.

4 Press ▷ to start playing the reserved title or track.
You can reserve other titles or tracks during playing by repeating from Step 2.

To exit the RESERVE display
Press RESERVE. The RESERVE display is turned off, however, the player memorizes the contents of the reserve.

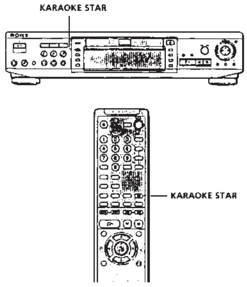
To cancel reserve play
Select "OFF" in "RESERVE" in Karaoke Control Menu or press CLEAR.

You can display "RESERVE" display using the Karaoke Control Menu
Select "SET➡" in "RESERVE" in the Karaoke Control Menu display.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 47.

Notes
- You cannot do Shuffle Play and Repeat Play during reserving. Shuffle Play or Repeat Play setting is canceled when you start reserving.
- If the reserved title or track does not exist, "Reserve play of title ** is prohibited now." or "Reserve play of track ** is prohibited now." appears and next title or track is played.
- Reserve function does not work during PBC playback of a VIDEO CD.

Additing Richness to Your Voice (Karaoke Star) DVD VIDEO CD CD

If you feel that your voice lacks depth, use the Karaoke Star function.



Press KARAOKE STAR in karaoke mode.
The KARAOKE STAR button/indicator lights.
Each time you press KARAOKE STAR, the effect level changes as follows:

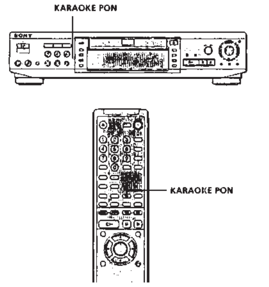
→ 1 (low): Green indicator
↓
2 (high): Amber indicator
↓
OFF: Indicator off

To cancel the Karaoke Star function
Press KARAOKE STAR until the indicator turns off.

You can turn on and off the Karaoke Star function using "KARAOKE STAR" in the Karaoke Control Menu display
Select "KARAOKE STAR" in the Karaoke Control Menu, select the setting using ⬆/⬇, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 47.

Playing Karaoke with Any Stereo Disc (Karaoke Pon) DVD VIDEO CD CD

You can enjoy karaoke with a stereo-recorded disc, even if it is a non-karaoke disc, by reducing the vocal.



Press KARAOKE PON in karaoke mode.

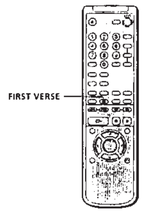
To cancel the Karaoke Pon function
Press KARAOKE PON again.

You can turn on and off the Karaoke Pon function using "KARAOKE PON" in the Karaoke Control Menu display
Select "KARAOKE PON" in the Karaoke Control Menu, select "ON" or "OFF" using ⬆/⬇, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 47.

Notes
- The stereo effect will be reduced.
- This function may not work well in the following cases:
  - only a few instruments are playing
  - a duet is playing
  - the vocal on the disc deviates from the center
  - monaural-recorded discs (the accompaniment is also reduced)
  - multiplex discs

Playing Only First Verse of Each Title (First Verse) DVD

You can play only the first verse of the title. It is convenient when you want to sing many songs. You can use this function only for DVDs with the First Verse function.



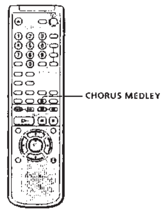
In karaoke mode, press FIRST VERSE while playing a disc.

To cancel the First Verse function
Press FIRST VERSE again.

You can turn on and off the First Verse function using "FIRST VERSE" in the Karaoke Control Menu display
Select "FIRST VERSE" in the Karaoke Control Menu, select "ON" or "OFF" using ⬆/⬇, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 47.

Searching for the Title by Listening the Chorus (Chorus Medley) DVD

You can play the chorus part of all titles in the disc sequentially. You can use this function only for DVDs with the Chorus Medley function.



1 In karaoke mode, press CHORUS MEDLEY before you start playing.

2 Press ▷.
The player starts Chorus Medley playback.

To go to the chorus part of the next title
Press ▶▶I.

To go back to the chorus part of the preceding title
Press I◀◀.

To start playback from the beginning of the title being played
During Chorus Medley playback, press ▷. The Chorus Medley Play is canceled.

To cancel the Chorus Medley Play
Press CHORUS MEDLEY again.

You can turn on and off the Chorus Medley Play function using "CHORUS MEDLEY" in the Karaoke Control Menu display
Select "CHORUS MEDLEY" in the Karaoke Control Menu, select "ON" or "OFF" using ⬆/⬇, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 47.

Note
If you press CHORUS MEDLEY while playing a disc, the Chorus Medley function will not work.

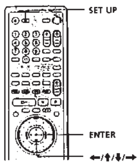
Settings and Adjustments

This chapter describes how to set and how to adjust using the on-screen SET UP menu. Most settings and adjustments are required to be set when you first use the player.
This chapter also describes how to set the remote for controlling the TV or the AV receiver (amplifier).

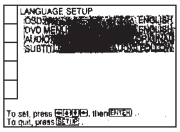
Using the Setup Display DVD VIDEO CD CD

Using the setup display, you can do the initial setup, adjusting the picture and sound quality, setting the various outputs, etc. You can also set a language for the subtitles and the setup display, limit playback by children, etc.
For details on each setup display item, see pages 62 to 72.

Note
You can display the setup display only when the player is in stop mode.



1 Press SET UP to display the setup display on the TV screen.



2 Select the main item you want using ↑/↓, and then press ENTER.

The selected main item is highlighted.

Main item

LANGUAGE SETUP
OSD: ENGLISH
DVD MENU: ENGLISH
AUDIO: ORIGINAL
SUBTITLE: AUDIO FOLLOW
To set, press ←↑↓→, then ENTER.
To quit, press SETUP.

↓

SCREEN SETUP
TV TYPE: 16:9
SCREEN SAVER: ON
BACKGROUND: JACKET PICTURE
STARTUP SCREEN: STANDARD
To set, press ←↑↓→, then ENTER.
To quit, press SETUP.

3 Select the item you want using ↑/↓, then press → or ENTER.

SCREEN SETUP
TV TYPE: 16:9
SCREEN SAVER: ON
BACKGROUND: JACKET PICTURE
STARTUP SCREEN: STANDARD
To set, press ←↑↓→, then ENTER.
To quit, press SETUP.

↓

SCREEN SETUP
TV TYPE: 16:9
SCREEN SAVER: 16:9
BACKGROUND: 4:3 LETTER BOX
STARTUP SCREEN: 4:3 PAN SCAN
To set, press ←↑↓→, then ENTER.
To quit, press SETUP.

4 Select the setting you want using ←/↑/↓/→, then press ENTER.

SCREEN SETUP
TV TYPE: 16:9
SCREEN SAVER: 16:9
BACKGROUND: 4:3 LETTER BOX
STARTUP SCREEN: 4:3 PAN SCAN
To set, press ←↑↓→, then ENTER.
To quit, press SETUP.

↓

SCREEN SETUP
TV TYPE: 4:3 PAN SCAN
SCREEN SAVER: ON
BACKGROUND: JACKET PICTURE
STARTUP SCREEN: STANDARD
To set, press ←↑↓→, then ENTER.
To quit, press SETUP.

To cancel using the setup display on the way

Press SET UP on the remote.

Note

Some setup display items require operations other than selecting the setting. For details on these items, see the relevant pages.

Settings and Adjustments

Setup Display Item List

Default settings are underlined.

LANGUAGE SETUP (page 62)
- OSD
  - ENGLISH (underlined)
  - CHINESE 1
  - CHINESE 2
- DVD MENU
  - ENGLISH (underlined)
  - CHINESE
  - JAPANESE
  - FRENCH
  - GERMAN
  - ITALIAN
  - SPANISH
  - DUTCH
  - DANISH
  - SWEDISH
  - FINNISH
  - NORWEIGEN
  - PORTUGUESE
  - RUSSIAN
  - OTHERS →
- AUDIO
  - ORIGINAL (underlined)
  - (same as DVD MENU)
- SUBTITLE
  - AUDIO FOLLOW (underlined)
  - (same as DVD MENU)

SCREEN SETUP (page 63)
- TV TYPE
  - 16:9 (underlined)
  - 4:3 LETTER BOX
  - 4:3 PAN SCAN
- SCREEN SAVER
  - ON (underlined)
  - OFF
- BACKGROUND
  - JACKET PICTURE (underlined)
  - PICTURE MEMORY
  - GRAPHICS
  - BLUE
  - BLACK
- STARTUP SCREEN
  - STANDARD (underlined)
  - PICTURE MEMORY

CUSTOM SETUP (page 64)
- COLOR SYSTEM
  - AUTO (underlined)
  - PAL
  - NTSC
- AUTO PLAY
  - OFF (underlined)
  - TIMER
  - DEMO1
  - DEMO2
- DIMMER
  - BRIGHT (underlined)
  - DARK
  - OFF
- PAUSE MODE
  - AUTO (underlined)
  - FRAME
- BOOKMARK RESET →
- PARENTAL CONTROL →
- PLAYBACK MEMORY
  - ON (underlined)
  - OFF

AUDIO SETUP (page 68)
- AUDIO ATT
  - OFF (underlined)
  - ON
- AUDIO FILTER
  - SHARP (underlined)
  - SLOW
- AUDIO DRC
  - STANDARD (underlined)
  - TV MODE
  - WIDE RANGE
- TRACK SELECTION
  - OFF (underlined)
  - AUTO
- DOWNMIX
  - DOLBY SURROUND (underlined)
  - NORMAL
- DIGITAL OUT
  - ON (underlined)
    - DOLBY DIGITAL
    - MPEG
    - DTS
  - OFF

SPEAKER SETUP (page 71)
- SIZE
  - FRONT
  - CENTER
  - REAR
  - SUBWOOFER
- DISTANCE
  - FRONT
  - CENTER
  - REAR
- BALANCE
  - FRONT
  - REAR
- LEVEL
  - CENTER
  - REAR
  - SUBWOOFER
- TEST TONE
  - OFF (underlined)
  - ON

Settings and Adjustments

Setting the Language for Display and Sound (LANGUAGE SETUP) DVD VIDEO CD CD

Select "LANGUAGE SETUP" after pressing SET UP.
"LANGUAGE SETUP" allows you to set various languages for on-screen display or sound.
Default settings are underlined.

Note

When you select a language that is not recorded on the DVD, one of the recorded languages is automatically selected except for the "OSD".

LANGUAGE SETUP
OSD: ENGLISH
DVD MENU: ENGLISH
AUDIO: ORIGINAL
SUBTITLE: AUDIO FOLLOW
To set, press ←↑↓→, then ENTER.
To quit, press SETUP.

■OSD (On-Screen Display)

Switches the language for the on-screen display.
- <u>ENGLISH</u>
- CHINESE 1
- CHINESE 2

■DVD MENU

Switches the language for the DVD menu.
- <u>ENGLISH</u>
- CHINESE
- JAPANESE
- FRENCH
- GERMAN
- ITALIAN
- SPANISH
- DUTCH
- DANISH
- SWEDISH
- FINNISH
- NORWEGIAN
- PORTUGUESE
- RUSSIAN
- OTHERS→

  When you select "OTHERS→," select and enter the language code from the list using the number buttons (page 82).
  After you have once selected, the language code (4 digits) is displayed.

■AUDIO

Switches the language for the sounds.
- <u>ORIGINAL</u>: the language given priority in the disc
- ENGLISH
- CHINESE
- JAPANESE
- FRENCH
- GERMAN
- ITALIAN
- SPANISH
- DUTCH
- DANISH
- SWEDISH
- FINNISH
- NORWEGIAN
- PORTUGUESE
- RUSSIAN
- OTHERS→

  When you select "OTHERS→," select and enter the language code from the list using the number buttons (page 82).
  After you have once selected, the language code (4 digits) is displayed.

■SUBTITLE

Switches the language for the subtitles.
- <u>AUDIO FOLLOW</u>*
- ENGLISH
- CHINESE
- JAPANESE
- FRENCH
- GERMAN
- ITALIAN
- SPANISH
- DUTCH
- DANISH
- SWEDISH
- FINNISH
- NORWEGIAN
- PORTUGUESE
- RUSSIAN
- OTHERS→

  When you select "OTHERS→," select and enter the language code from the list using the number buttons (page 82).
  After you have once selected, the language code (4 digits) is displayed.

* When you select "AUDIO FOLLOW," the language for the subtitles changes according to the language for the setting you selected in "AUDIO."

Note

The player gives priority to the settings of "SUBTITLE" and "AUDIO" in the Control Menu display when "PLAYBACK MEMORY" is set to "ON." The settings of "SUBTITLE" and "AUDIO" selected in the setup display may not appear in this case. For details on the Playback Memory function, see page 65

Settings and Adjustments

Settings for Display (SCREEN SETUP) DVD VIDEO CD CD

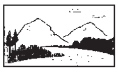
Select "SCREEN SETUP" after pressing SET UP.
"SCREEN SETUP" allows you to set the display according to the playback conditions.
Default settings are underlined.

SCREEN SETUP
TV TYPE: 16:9
SCREEN SAVER: ON
BACKGROUND: JACKET PICTURE
STARTUP SCREEN: STANDARD
To set, press ←↑↓→, then ENTER.
To quit, press SETUP.

■TV TYPE

Selects the aspect ratio of the TV to be connected.
- <u>16:9</u>: when you connect a wide-screen TV to the player.
- 4:3 LETTER BOX: when you connect a normal TV to the player. Displays a wide picture with bands displayed on the upper and lower portions of the screen.
- 4:3 PAN SCAN: when you connect a normal TV to the player. Displays the wide picture on the whole screen with a portion automatically cut off.

16:9



4:3 LETTER BOX

4:3 PAN SCAN

Note

Depending on the DVD, "4:3 LETTER BOX" may be selected automatically instead of "4:3 PAN SCAN" and vice versa.

■SCREEN SAVER

Turns on and off the screen saver. If you turn on the screen saver, the screen saver image appears when you leave the player or the remote in pause or stop mode for 15 minutes or when you play back a CD for more than 15 minutes. The screen saver is useful to prevent your display from becoming damaged.
- <u>ON</u>: turns on the screen saver.
- OFF: turns off the screen saver.

■BACKGROUND

Selects the background color or picture of the TV screen in stop mode or while playing a CD.
- <u>JACKET PICTURE</u>: The jacket picture appears in the background, but only when the jacket picture is already recorded on the disc.
- PICTURE MEMORY: Your favorite picture appears in the background when you have the player store in memory your favorite scene recorded on the disc for the background picture. For the way of storing in memory, see "Storing the picture in memory."
- GRAPHICS: The picture stored in memory in the player beforehand appears in the background.
- BLUE: The background color is blue. When the player is in karaoke mode, the background color changes to magenta.
- BLACK: The background color is black.

Note

If a disc which does not contain the jacket picture is played while "BACKGROUND" is set to "JACKET PICTURE," the graphic picture stored in the player will automatically appear in the background.

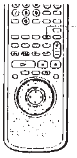
■STARTUP SCREEN

Selects the startup screen. The startup screen image you selected appears when you turn on the player.
- <u>STANDARD</u>: The standard startup screen memorized in the player beforehand appears.
- PICTURE MEMORY: Your favorite picture appears in the startup screen when you have the player store in memory your favorite scene recorded on the disc for the startup screen. For the way of memorizing, see "Storing the picture in memory" (page 64).

Settings and Adjustments

Storing the picture in memory

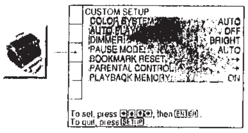
During playback, when you find the scene to be stored in memory, press PICTURE MEMORY on the remote.
The picture is stored in memory.



Notes
- The player can store in memory only one scene. The stored picture appears in both the background and the startup screen.
- When the picture is stored in memory by pressing PICTURE MEMORY, the picture stored before is not retained in memory.
- When you operate this player during storing picture in memory, the picture does not be stored in memory.

Custom Settings (CUSTOM SETUP) DVD VIDEO CD CD

Select "CUSTOM SETUP" after pressing SET UP.
"CUSTOM SETUP" allows you to set the playback conditions.
Default settings are underlined.



■COLOR SYSTEM
Selects the color system when you play a VIDEO CD.
- AUTO: Outputs the video signal in the system of the VIDEO CD, either PAL or NTSC. If your TV is the DUAL system, select AUTO.
- PAL: changes the video signal of an NTSC VIDEO CD and outputs it in PAL system.
- NTSC: changes the video signal of a PAL VIDEO CD and outputs it in NTSC system.

Notes
- You cannot change the color system of the DVD itself.
- You can change the color system of this unit according to the connected TV. See page 9.

■AUTO PLAY
Selects the setting of Auto Play when you connect the AC power cord to the AC outlet.
- OFF: does not use "TIMER," "DEMO1" or "DEMO2" to start playing.
- TIMER: starts playing a disc automatically when you connect the AC power cord to the AC outlet. By connecting a timer (not supplied), you can start playing at any time you want.
- DEMO1: starts playing the demonstration 1 automatically.
- DEMO2: starts playing the demonstration 2 automatically.

■DIMMER
Adjusts the lighting of the front panel display.
- BRIGHT: makes the front panel display bright.
- DARK: makes the front panel display dark.
- OFF: turns off the lighting of the front panel display.

■PAUSE MODE (DVD only)
Selects the picture in pause mode.
- AUTO: A picture including subjects that move dynamically is output with no jitter. Normally select this position.
- FRAME: A picture including subjects that do not move dynamically is output with high resolution

■BOOKMARK RESET→
Select "BOOKMARK RESET→." The BOOKMARK reset display appears. And then press ENTER to reset all bookmarks.

■PARENTAL CONTROL→
Sets a password and playback limitation level when you play DVDs with playback limitation for children.
For details, see "Limiting Playback by Children (Parental Control) ."

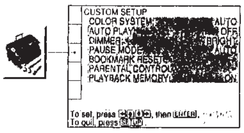
■PLAYBACK MEMORY
You can have the player store the settings of SUBTITLE and VIDEO EQ, etc., of each disc up to 200 discs. (Playback Memory)
Set the Playback Memory function on or off.
- ON: stores the settings in memory when you eject the disc.
- OFF: does not store the settings in memory.

Following settings are stored in memory with the Playback Memory function.
- AUDIO (page 31)
- SUBTITLE (page 33)
- ANGLE (page 33)
- VIRTUAL 3D SURROUND (page 34)
- VIDEO EQ (page 43)
- DNR (page 43)

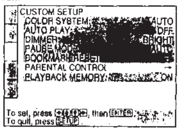
Note
The player can store in memory the settings of up to 200 discs When you have the player store over 200 discs in memory, each new setting erases the setting from those first stored.

Limiting Playback by Children (Parental Control) DVD

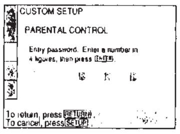
Select "CUSTOM SETUP" after pressing SET UP.
Playing some DVDs can be limited depending on the age of users. The "Parental Control" function allows you to set a playback limitation level.



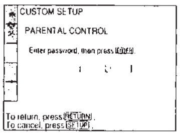
1 Select "PARENTAL CONTROL" using ↑/↓, then press ENTER.



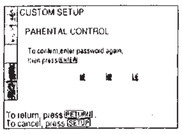
■When you have not entered a password yet
The display for entering a password appears.



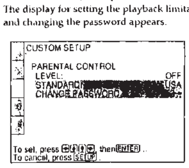
■When you have already entered a password
The display for confirming the password appears. Skip Step 2.



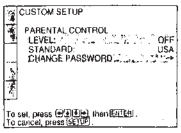
2 Enter a password in 4 digits using the number buttons, then press ENTER.
The digits change to asterisks (✱), and the display for confirming the password appears.



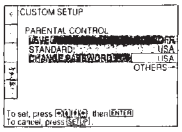
3 To confirm your password, enter it using the number buttons, then press ENTER.
The display for setting the playback limitation level and changing the password appears.



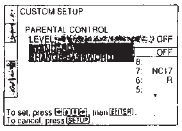
4 Select "STANDARD" using ↑/↓, then press →.



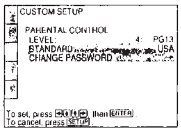
5 Select an area as the standard for playback limitation level using ↑/↓, then press →.
When you select "OTHERS→," select and enter the standard code in the table below using number buttons.



6 Select "LEVEL" using ↑/↓, then press →.



7 Select the level you want using ↑/↓, then press ENTER.



The lower the value is, the more strict the limitation.

To return to the normal screen
Press SET UP.

To turn off the Parental Control function and play the DVD after entering your password
Set "LEVEL" to "OFF" in Step 7, then press ▷.

To change the password
1 After Step 3, select "CHANGE PASSWORD" using ↑/↓, then press → or ENTER.
The display for changing the password appears.
2 Follow Steps 2 and 3 to enter a new password.

💡 You can turn off the Parental Control function just after inserting the DVD (Parental Control Temporarily Canceled)
When you set a playback limitation level and insert the DVD, the PARENTAL CONTROL display appears. Enter the password to turn off the Parental Control function.
When you stop playing the DVD, the level returns to the original level.

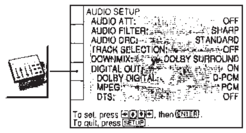
💡 If you have forgot your password
Enter the 6 digits number "199703" in Step 2 to clear the current password. To enter a new password, follow the procedure from Step 2 again.

Notes
- When you play DVDs which do not have the Parental Control function, playback cannot be limited on this player.
- When you do not set a password, you cannot change the settings for playback limitation.
- Depending on the DVD, you may be asked to change the parental control level while playing the disc. In this case, enter the password, then change the level.
  When you stop playing the DVD, the level returns to the original level.

Standard	Code number
Austria	2046
Belgium	2057
Canada	2079
China	2092
Denmark	2115
Finland	2165
France	2174
Germany	2109
Hong Kong	2219
Indonesia	2238
Italy	2254
Japan	2276
Malaysia	2363
Netherlands	2376
Norway	2379
Philippines	2424
Russian	2489
Singapore	2501
Spain	2149
Sweden	2499
Switzerland	2086
Taiwan	2543
Thailand	2528
United Kingdom	2184

Settings for Sound (AUDIO SETUP)

Select "AUDIO SETUP" after pressing SET UP.
"AUDIO SETUP" allows you to set the sound according to the playback conditions.
Default settings are underlined.



■AUDIO ATT (attenuation)

Selects the setting of the output from the LINE OUT (AUDIO 1, 2) and 5.1 OUTPUT connectors according to the audio equipment to be connected.

- OFF: turns off the audio attenuation.
- ON: reduces the audio output level so that no sound distortion occurs.

Note
The setting does not affect the output from the DIGITAL OUT OPTICAL and COAXIAL connectors.

■AUDIO FILTER

Selects the type of digital filter to reduce the noise of a frequency higher than 22.05kHz (fs 44.1kHz), 24kHz (fs 48kHz) or 48kHz (fs 96kHz).

- SHARP: makes the sound clear and provides smooth sound reproduction. Normally set this position.
- SLOW: makes the sound warm and deep.

Note
Depending on the disc, the effect on the sound may be difficult to hear.

■AUDIO DRC (Dynamic Range Control)

Makes the sound clear with the volume turned down at night, etc., when you play a DVD. This affects the output from the DIGITAL OUT connectors only when "PCM" in "DIGITAL OUT" is set to "ON," and it affects the output from the LINE OUT (AUDIO 1, 2) and 5.1CH OUTPUT connectors.

- STANDARD: Normally select this position.
- TV MODE: makes the low sound clear even if you turned the volume down, so it is good for playing at night. It is especially recommended when you listen to the sound using the speakers of the TV.
- WIDE RANGE: It gives you the feeling of being at a live performance. When you use high quality speakers, it is more effective.

Notes
- When you play DVDs without the AUDIO DRC function, there may be no effect on the sound.
- When this item is set to "WIDE RANGE," the sound volume from other than the 5.1CH OUTPUT connectors may be less than usual.
- "WIDE RANGE" cannot be selected when you have selected "NONE" in "SIZE" under "SPEAKER SETUP."

■TRACK SELECTION

Gives the sound track which contains the highest number of the channels priority when you play a DVD on which multiple audio formats are recorded. If multiple audio channels are recorded in PCM, DTS, MPEG AUDIO or Dolby Digital format, the higher-numbered channel audio recorded in PCM, DTS, MPEG AUDIO or Dolby Digital format is played.

- OFF : No priority given.
- AUTO : Priority given.

Notes
- When the player stores the settings in memory with the Playback Memory function, the player may not give priority even if you select "AUTO."
- When you set this item to "AUTO", the language may change depending on the "AUDIO" settings in "LANGUAGE SETUP." The "TRACK SELECTION" setting has higher priority than that of "AUDIO" settings in "LANGUAGE SETUP" (page 62).
- If you set "DTS" in "AUDIO SETUP" to "OFF", the DTS sound track is not played even if you set this item to "AUTO" and the highest-numbered channel audio is recorded in DTS format.
- If PCM, DTS, MPEG AUDIO and Dolby Digital sound tracks have the same number of the highest channels, the player selects PCM, DTS, Dolby Digital and MPEG AUDIO sound tracks, in this order.
- Depending on the DVD, the audio with priority may be predetermined. In this case, you cannot give priority to the DTS, MPEG AUDIO or Dolby Digital format by selecting "AUTO."

■DOWNMIX*

Switches the mixing down methods when you play a DVD on which the sound in Dolby Digital format is recorded.

- DOLBY SURROUND: when the player is connected to an audio component that conforms to Dolby Surround (Pro Logic).
- NORMAL: when the player is connected to a normal audio component.

* The setting affects the following connectors:
–LINE OUT (AUDIO 1, 2) connectors
–DIGITAL OUT (OPTICAL, COAXIAL) connectors.

■DIGITAL OUT

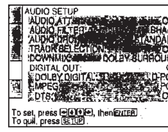
Selects output signals via the DIGITAL OUT OPTICAL and COAXIAL connectors.

- ON: Normally select this position. When you select "ON," set "DOLBY DIGITAL," "MPEG" and "DTS." For details on setting them, see "Setting for the Signal to the Digital Output."
- OFF: when the player does not output the sound signals via DIGITAL OUT OPTICAL and COAXIAL connectors, if you select this position, the influence of the digital circuit upon the analog one is minimum.

Notes
- When you play the sound tracks with 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL, COAXIAL) are converted to 48 kHz (sampling frequency). When the signals are output from LINE OUT (AUDIO 1, 2) connectors, sampling frequency stays at 96kHz and the output signals are converted to analog signals.
- When you select "OFF," You cannot set "DOLBY DIGITAL," "MPEG" and DTS."

Setting for the Signal to the Digital Output

When you select "ON," set "DOLBY DIGITAL," "MPEG" and DTS."
Switches the methods of outputting audio signals when you connect a digital component such as a receiver (amplifier) having a digital connector, an audio component having a built-in DTS decoder, a DAT or MD via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord. For details on the connection, see page 11.



■DOLBY DIGITAL

Selects output Dolby Digital signals via the DIGITAL OUT OPTICAL and COAXIAL connectors. You cannot select this item when you set "DIGITAL OUT" to "OFF."

- D-PCM (Downmix PCM): when you play the Dolby Digital sound tracks, the output audio signals are mixed down to 2 channels. With the settings of the item "DOWNMIX" in "AUDIO SETUP," you can select whether the signals conform to Dolby Surround (Pro Logic) or not.
- DOLBY DIGITAL: when the player is connected to an audio component with a built-in Dolby Digital decoder.

Note
If the player is connected to an audio component lacking a built-in Dolby Digital decoder, do not set "DOLBY DIGITAL" in "AUDIO SETUP" to "DOLBY DIGITAL." Otherwise, when you play the Dolby Digital sound track, a loud noise or no sound will come out from the speakers, affecting your ears or causing the speakers to be damaged.

■MPEG

Selects output MPEG AUDIO signals via the DIGITAL OUT OPTICAL and COAXIAL connectors. You cannot select this item when you set "DIGITAL OUT" to "OFF."

- PCM: when the player is connected to an audio component lacking a built-in MPEG decoder. If you play MPEG AUDIO sound tracks, the player outputs stereo signals taken from MPEG AUDIO signals via the DIGITAL OUT OPTICAL and COAXIAL connectors.
- MPEG: when the player is connected to an audio component having a built-in MPEG decoder.

Note
If the player is connected to an audio component lacking a built-in MPEG decoder, do not set "MPEG" in "AUDIO SETUP" to "MPEG." Otherwise, when you play the MPEG AUDIO sound track, a loud noise will come out from the speakers, affecting your ears or causing the speakers to be damaged.

Note
The player outputs the MPEG analog audio sound only from the front speakers when you set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "MPEG" to "MPEG."

■DTS

Selects output DTS signals via the DIGITAL OUT OPTICAL and COAXIAL connectors. You cannot select this item when you set "DIGITAL OUT" to "OFF."

- OFF: when the player is connected to an audio component lacking a built-in DTS decoder.
- ON: when the player is connected to an audio component having a built-in DTS decoder.

Note
Select the setting correctly. Otherwise, no sound or strange sound will come out from the speakers, affecting your ears or causing the speakers to be damaged.

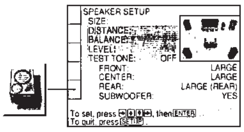
- **Do not play the DTS sound tracks without connecting the player to an audio component having a built-in DTS decoder. You cannot hear the DTS sound unless you connect the player to an audio component having a built-in DTS decoder.**
- **When you play the DTS sound track on a CD, a loud noise may come out from the LINE OUT (AUDIO 1, 2), 5.1CH OUTPUT and PHONES connectors, affecting your ears or causing the speakers or headphones to be damaged.**
- **When you play the DTS sound track on a DVD, no sounds will come out from the LINE OUT (AUDIO 1, 2), 5.1CH OUTPUT and PHONES connectors.**

Notes on playing the DTS sound tracks on a CD
- Do not play the DTS sound tracks without connecting the player to an audio component having a built-in DTS decoder. The player output the DTS signal via the DIGITAL OUT OPTICAL and COAXIAL connectors even if "DTS" in "AUDIO SETUP" is set to "OFF" in the setup display, affecting your ears or causing the speakers to be damaged.
- The DTS indicator on the front panel does not light up even if the player outputs DTS signal via the DIGITAL OUT OPTICAL and COAXIAL connectors.
- Set the sounds to "STEREO" when you play the DTS sound tracks on a CD. (See "Changing the Sounds" on page 31.) If you set the sounds to "1/L" or "2/R", no sounds will come out from the DIGITAL OUT OPTICAL and COAXIAL connectors.

Notes on playing the DTS sound tracks on a DVD
- No sounds will come out from the LINE OUT (AUDIO 1, 2) and PHONES connectors.
- If the player is connected to an audio component lacking a built-in DTS decoder, do not set "DTS" in "DIGITAL OUT" to "ON" in the setup display. Otherwise, when you play the DTS sound track, a loud noise will come out from the speakers, affecting your ears or causing the speakers to be damaged.
- When you set "DTS" in "AUDIO SETUP" to "OFF", no sound will come out from the DIGITAL OUT OPTICAL and COAXIAL connectors even if you play DTS sound tracks on DVDs.

Speaker Set Up

Select "SPEAKER SETUP" after pressing SET UP.
To obtain the best possible surround sound, first specify the size of speakers you have connected and their distance from your listening position and set the balance and level. Then use the test tone to adjust the speaker volumes to the same level.
For the speaker hook ups, see pages 12 to 13.



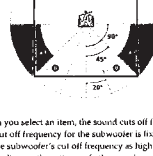
■SIZE

Selects the size of the speakers to be connected.

- FRONT
  —LARGE: Normally select this.
  —SMALL: When the sound cracks or the effects of the surround is difficult to hear, select this. This activates the Dolby Digital bass redirection circuitry and outputs the bass frequencies of the speaker from subwoofers.
- CENTER
  —NONE: If you will not connect a center speaker, select this.
  —LARGE: Normally select this.
  —SMALL: When the sound cracks, select this. This activates the Dolby Digital bass redirection circuitry and outputs the bass frequencies of the speaker from some other speakers .
- REAR
  —NONE: If you will not connect a rear speaker, select this.
  —LARGE (REAR*/SIDE*): Normally select this.
  —SMALL (REAR*/SIDE*): When the sound cracks or the effects of the surround is difficult to hear, select this. This activates the Dolby Digital bass redirection circuitry and outputs the bass frequencies of the speaker from some other speakers .
- SUBWOOFER
  —NONE: If you do not connect a subwoofer, select this. This activates the Dolby Digital bass redirection circuitry and outputs the LFE signals from the front speakers.
  —YES: If you connect a subwoofer, select this to output the LFE (low frequency effects) channel from the subwoofer.

* Rear speaker position (REAR/SIDE)
These items let you specify the location of your rear speakers for proper implementation of "VIRTUAL REAR SHIFT" and "VIRTUAL MULTI REAR" in the Control Menu display. Refer to the illustration below.
- Set to "SIDE" if the location of your rear speakers corresponds to section A.
- Set to "REAR" if the location of your rear speakers corresponds to section B.

This setting effects only the "VIRTUAL REAR SHIFT" and "VIRTUAL MULTI REAR" mode.



Notes
- When you select an item, the sound cuts off for a moment.
- The cut off frequency for the subwoofer is fixed at 100Hz.
- Set the subwoofer's cut off frequency as high as possible.
- Depending on the settings of other speakers, the subwoofer may output excessive sound.
- If your speakers are too small to reproduce low bass frequencies, please set all speaker settings to "SMALL" and utilize a subwoofer for low frequency sound.

■DISTANCE

You can vary the distance of each speaker as follows.
Default adjustments are in the parentheses.

- FRONT (3.6m)
  Front speaker distance can be set in 0.2 meter steps from 1 to 15 meters.
- CENTER (3.6m)
  Center speaker distance can be set in 0.2 meter steps from a distance 0.6 meter farther to the front speaker to a distance 1.6 meters closer to your listening position.
- REAR (3.0m)
  Rear speaker distance can be set in 0.2 meter steps from a distance equal to the front speaker distance to a distance 5 meters closer to your listening position.

Notes
- When you set the distance, the sound cuts off for a moment.
- If each of the front or rear speakers are not placed an equal distance from your listening position, set the distance of the closest speaker.
- Do not place the rear speaker farther away from your listening position than the front speakers.

Setting for Speakers (SPEAKER SETUP)

■BALANCE
You can vary the balance of each speaker as follows. Default adjustments are in the parentheses.
- FRONT (0dB)
  Adjust the balance between the front left and right speakers (-6dB [L] to +6dB [R], 0.5dB steps).
- REAR (0dB)
  Adjust the balance between the rear left and right speakers (-6dB [L] to +6dB [R], 0.5dB steps).

■LEVEL
You can vary the level of each speaker as follows. Default adjustments are in the parentheses.
- CENTER (0dB)
  Adjust the level of the center speaker (-6dB to +6dB, 0.5dB steps).
- REAR (0dB)
  Adjust the level of the rear speakers (-6dB to +6dB, 0.5dB steps).
- SUBWOOFER (0dB)
  Adjust the level of the subwoofer (-10dB to +6dB, 0.5dB steps).

■TEST TONE
You can hear the test tone from each speaker in sequence.
- OFF: The test tone is not emitted from speakers.
- ON: During adjustment of "BALANCE" or "LEVEL," the test tone is emitted from both speakers simultaneously.

Note
While you are playing a disc, you cannot hear the test tone Execute the test tone after you stop playback.

To adjust the volume of all the speakers at one time
Use the receiver's (amplifier's) volume control.

To return to the default setting
Select the item, then press CLEAR.

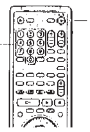
Adjusting the speaker volume

1. **While you stop playback, select "SPEAKER SETUP" after pressing SET UP.**
2. **Select "TEST TONE" and set "TEST TONE" to "ON."**
   You will hear the test tone from each speaker in sequence.
3. **From your listening position, select "BALANCE" or "LEVEL" and adjust the value of "BALANCE" and "LEVEL" using ↑/↓.**
   During this adjustment, the test tone is emitted from both speakers simultaneously.
4. **Select "TEST TONE" and set "TEST TONE" to "OFF" to turn off the test tone.**

Settings and Adjustments

Controlling the TV or the AV Receiver (Amplifier) with the Supplied Remote RMT-D111E

If you adjust the remote signal, you can control your TV with the supplied remote. Default setting is to control Sony TVs with the mark.
When you connect the player to a Sony AV receiver (amplifier), you can also set the input of the receiver (amplifier) to this player with the supplied remote.



Controlling TVs with the remote

Hold down I/⏻ (POWER), and enter your TV's manufacturer's code (see the table) using the number buttons. Then release I/⏻ (POWER).

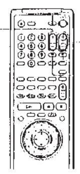
Code numbers of controllable TVs
If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Notes
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote commander, the code number may reset to 01 (Sony). Reset the appropriate code number.

Manufacturer	Code number
Sony (default)	01
Gold Star	03, 04
Philips	06, 08
Mivar	09
Blaupunkt	10, 21
Grundig	11
Saba	12, 13
Panasonic	17, 49
Samsung	23
Hitachi	24
Sanyo	25
Pioneer	26
Mitsubishi	27, 28, 50
Sharp	29
Aiwa	32
JVC	33
Toshiba	38
Siemens	39
Thomson	43
Loewe	45
Orion	47, 48
Ferguson	52
NEC	66
TEAC	67
Akai	68
Nokia	69

Settings and Adjustments

You can control your TV using the keys below.



By pressing	You can
TV I/⏻	Turn the TV on or off
TV/VIDEO	Select the input source for the TV between the TV and VCR
WIDE MODE	Switch the wide picture on or off
VOL	Adjust the volume of the TV
CH	Change the channel of the TV

Note
Depending on the TV, you may not be able to control your TV or to use some of the buttons above

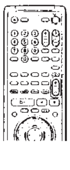
Controlling an AV receiver (amplifier) with the remote

Hold down I/⏻ (POWER), and enter your AV receiver's manufacturer's code (see the table below) using the number buttons. Then release I/⏻ (POWER).

Manufacturer	Code number
Sony	91(default), 88, 89
Denon	84, 85, 86
Kenwood	92, 93
Onkyo	81, 82, 83
Pioneer	99
Sansui	87
Technics	97, 98
Yamaha	94, 95, 96

Code numbers of controllable receivers (amplifiers)
If more than one code number is listed, try entering them one at a time until you find the one that works with your receiver.

You can also change the sound volume of the AV receiver using AV VOL and AV MUTING.



Note
Depending on the AV receiver (amplifier), you may not be able to control your AV receiver (amplifier)

Settings and Adjustments

Self-diagnosis function

When the self-diagnosis function works to prevent the player from malfunctioning, a five-character service number (combination of a letter and digits) flashes on the front panel display. In this case, check the following table.

First three characters	Cause and/or Corrective Action
C13	• The disc is dirty. ➡Clean the disc with a cleaning cloth. (page 6)
C31	• The disc is not inserted correctly. ➡Open the disc tray and insert the disc correctly.
Exx (xx is any number)	• To prevent the player from malfunctioning, the self-diagnosis function has worked. ➡When you contact your Sony dealer or local authorized Sony service facility, give the 5 character service number. (example: E 61:10)

Additional Information

Language Code List

For details, see page 33, 62.

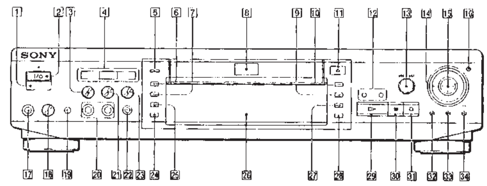
The language spellings conform to the ISO 639: 1988 (E/F) standard.

Code	Language	Code	Language	Code	Language	Code	Language
1027	Afar	1186	Scots Gaelic	1350	Malayalam	1513	Siswati
1028	Abkhazian	1194	Galician	1352	Mongolian	1514	Sesotho
1032	Afrikaans	1196	Guarani	1353	Moldavian	1515	Sundanese
1039	Amharic	1203	Gujarati	1356	Marathi	1516	Swedish
1044	Arabic	1209	Hausa	1357	Malay	1517	Swahili
1045	Assamese	1217	Hindi	1358	Maltese	1521	Tamil
1051	Aymara	1226	Croatian	1363	Burmese	1525	Telugu
1052	Azerbaijani	1229	Hungarian	1365	Nauru	1527	Tajik
1053	Bashkir	1233	Armenian	1369	Nepali	1528	Thai
1057	Byelorussian	1235	Interlingua	1376	Dutch	1529	Tigrinya
1059	Bulgarian	1239	Interlingue	1379	Norwegian	1531	Turkmen
1060	Bihari	1245	Inupiak	1393	Occitan	1532	Tagalog
1061	Bislama	1248	Indonesian	1403	(Afan) Oromo	1534	Setswana
1066	Bengali, Bangla	1253	Icelandic	1408	Oriya	1535	Tonga
1067	Tibetan	1254	Italian	1417	Punjabi	1538	Turkish
1070	Breton	1257	Hebrew	1428	Polish	1539	Tsonga
1079	Catalan	1261	Japanese	1435	Pashto; Pushto	1540	Tatar
1093	Corsican	1269	Yiddish	1436	Portuguese	1543	Twi
1097	Czech	1283	Javanese	1463	Quechua	1557	Ukrainian
1103	Welsh	1287	Georgian	1481	Rhaeto-Romance	1564	Urdu
1105	Danish	1297	Kazakh	1482	Kirundi	1572	Uzbek
1109	German	1298	Greenlandic	1483	Romanian	1581	Vietnamese
1130	Bhutani	1299	Cambodian	1489	Russian	1587	Volapuk
1142	Greek	1300	Kannada	1491	Kinyarwanda	1613	Wolof
1144	English	1301	Korean	1495	Sanskrit	1632	Xhosa
1145	Esperanto	1305	Kashmiri	1498	Sindhi	1665	Yoruba
1149	Spanish	1307	Kurdish	1501	Sangho	1684	Chinese
1150	Estonian	1311	Kirghiz	1502	Serbo-Croatian	1697	Zulu
1151	Basque	1313	Latin	1503	Singhalese	1703	Not specified
1157	Persian	1326	Lingala	1505	Slovak		
1165	Finnish	1327	Laothian	1506	Slovenian		
1166	Fiji	1332	Lithuanian	1507	Samoan		
1171	Faroese	1334	Latvian; Lettish	1508	Shona		
1174	French	1345	Malagasy	1509	Somali		
1181	Frisian	1347	Maori	1511	Albanian		
1183	Irish	1349	Macedonian	1512	Serbian		

Index to Parts and Controls

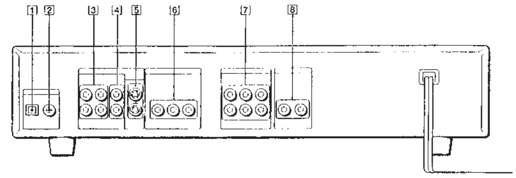
Refer to the pages indicated in parentheses for details.

Front Panel



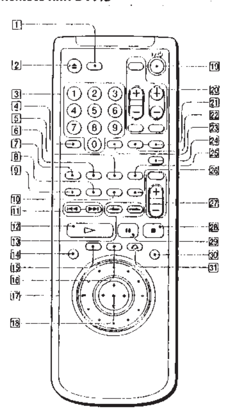
1 **(remote sensor) (7)**
Accepts the remote control signals.
2 **I/⏻ (POWER) button and indicator (15)**
Turns on and off the power of the player.
3 **MIC 1/3 LEVEL controls (49)**
Adjusts the volume of the microphone connected to the MIC 1 and 3 connectors.
4 **KEY CONTROL buttons/indicators (51)**
Press to adjust the key to suit the vocal in karaoke mode.
5 **MULTICHANNEL indicator (34)**
Lights up as follows:
- playing back multichannel surround sound such as Dolby Digital soundtrack and MPEG soundtrack
- the disc is not inserted
6 **KARAOKE STAR button/indicator (57)**
Gives the effect of depth to the vocal voice in karaoke mode.
7 **GUIDE MELODY button/indicator (51)**
Turns on and off the guide melody in karaoke mode.
8 **Disc tray (15)**
Place a disc on the tray.
9 **VOCAL button/indicator (52)**
Turns on and off the Vocal function in karaoke mode.
10 **VOCAL SUPPORT button/indicator (53)**
Turns on and off the Vocal Support function in karaoke mode.
11 **≜OPEN/CLOSE button (15)**
Opens or closes the disc tray.
12 **EFFECT MODE/DO buttons (55)**
Press to insert applause with or without cheers while playing karaoke.
13 **◀◀/▶▶I PREV/NEXT (DIRECT SEARCH dial) button (16)**
Turn to select a chapter or track, and then press to go back to the selected chapter or track.
14 **Click shuttle (17)**
Changes the playback speed.
15 **←/↑/↓/→/ ENTER button**
Selects and executes the items or settings.
16 **JOG button / indicator (17)**
Press to play a disc frame by frame.
17 **PHONES connector (15)**
Connect the headphones to this connector.
18 **PHONE LEVEL control (15)**
Adjusts the headphone volume.
19 **VIRTUAL 3D SURROUND button/indicator (35)**
Selects the item of "VIRTUAL 3D SURROUND." Each time you press the button, the item changes.
When you do not set "VIRTUAL 3D SURROUND" to "OFF," the indicator lights up.
20 **MIC 1 and 2 connectors (49)**
Connect the microphones to this connectors.
21 **MIC 2/4 LEVEL controls (49)**
Adjusts the volume of the microphone connected to the MIC 2 and 4 connectors.
22 **CONTROL (MIC 1/2) connector (49)**
Connect the control plug of a karaoke microphone.
23 **ECHO LEVEL control (49)**
Adjusts the echo of the all microphones connected to the MIC 1, 2, 3 and 4 connectors.
24 **AUTO PAUSE button/indicator (54)**
Pauses playing at the end of each track in karaoke mode.
25 **KARAOKE PON button/indicator (57)**
Reduces the singer's voice recorded in the disc in karaoke mode.
26 **Front Panel Display (21)**
Indicates the playing time, etc.
27 **VOCAL SELECT button/indicator (53)**
Selects the vocal in karaoke mode.
28 **RESERVE button/indicator (56)**
Displays the "RESERVE" display in karaoke mode.
29 **▷PLAY button (15)**
Plays a disc.
30 **IIPAUSE button (16)**
Pauses playing a disc.
31 **■STOP button (16, 18)**
Stops playing a disc.
32 **TITLE button (19)**
Displays the title menu on the TV screen.
33 **DVD MENU button (19)**
Displays the DVD menu on the TV screen.
34 **↶RETURN button (20, 24)**
Press to return to the previously selected screen, etc

Rear Panel



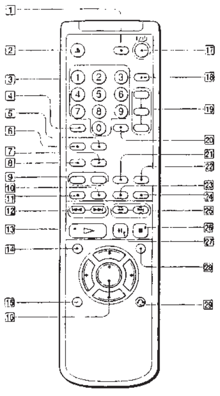
1 **DIGITAL OUT (OPTICAL) connector (11)**
Connects to an audio component using the optical digital connecting cord.
2 **DIGITAL OUT (COAXIAL) connector (11)**
Connects to an audio component using the coaxial digital connecting cord.
3 **LINE OUT (AUDIO 1, 2) connectors (8, 10)**
Connects to the audio input connector on the TV or receiver (amplifier).
4 **LINE OUT (VIDEO 1, 2) connectors (8)**
Connects to the video input connector on the TV or monitor.
5 **S VIDEO OUT (1, 2) connectors (8, 10)**
Connects to the S video input connector on the TV or monitor.
6 **COMPONENT VIDEO OUT connectors (9)**
Connects to a monitor or projector having component video input connectors (Y, CB/B-Y, CR/R-Y) that conform to output signals from the player.
7 **5.1CH OUTPUT connectors (13)**
Connects to a receiver (amplifier) having 5.1 channel input connectors.
8 **MIC 3, 4 connectors (49)**
Connects the wireless microphones to these connectors.

Remote RMT-D111E



1 **SET UP button (59)**
Displays the setup display on the TV screen to set or adjust the items.
2 **≜OPEN/CLOSE button (15)**
Opens or closes the disc tray.
3 **Number buttons**
Selects the items or settings.
4 **CLEAR button (37, 38, 39, 41)**
Press to return to the continuous play etc.
5 **REPEAT button (39)**
Displays the "REPEAT" display on the TV screen.
6 **PROGRAM button (36)**
Displays the "PROGRAM" display on the TV screen.
7 **SHUFFLE button (38)**
Displays the "SHUFFLE" display on the TV screen.
8 **ANGLE button (33)**
Changes the angles when playing a DVD.
9 **AUDIO button (31)**
Changes the sound while playing a DVD or VIDEO CD.
10 **SUBTITLE button (33)**
Displays the SUBTITLE menu in the Control Menu display.
11 **◀◀/▶▶IPREV/NEXT buttons (16)**
Press to go to the next chapter or track or to go back to the previous chapter or track.
12 **▷PLAY/SELECT button (15, 20)**
Plays a disc.
13 **◀—/—▶ INDEX buttons (16)**
Press to go to the next index or to go back to the preceding index.
14 **DISPLAY button (23)**
Displays the Control Menu display on the TV screen to set or adjust the items.
15 **TITLE button (19)**
Displays the title menu on the TV screen.
16 **DVD MENU button (19)**
Displays the DVD menu on the TV screen.
17 **Click shuttle (17)**
Changes the playback speed.
18 **←/↑/↓/→/ ENTER button**
Selects and executes the items or settings.
19 **I/⏻ (POWER) button (15)**
Turns on and off the power of the player.
20 **TV operation buttons (73, 74)**
Controls TVs.
21 **TIME/TEXT button (21)**
Displays the playing time of the disc, etc., on the front panel display.
22 **INPUT button (30)**
Press when labeling a disc.
23 **ENTER button**
Executes the items or settings.
24 **DNR button (43)**
Displays the "DNR" display on the TV screen.
25 **PICTURE MEMORY button (64)**
Press to store a picture in memory.
26 **BOOK MARK button (46)**
Press to set a bookmark.
27 **Amplifier operation buttons (74)**
Controls AV amplifiers
28 **■STOP button (16, 18)**
Stops playing a disc
29 **IIPAUSE button (16)**
Pauses playing a disc.
30 **JOG button / indicator (17)**
Press to play a disc frame by frame.
31 **↶RETURN button (20, 24)**
Press to return to the previously selected screen, etc.

Remote RMT-D110E



1 **KARAOKE MODE button (49)**
Press to set the player to karaoke mode.

2 **≜OPEN/CLOSE button (15)**
Opens or closes the disc tray.

3 **Number buttons**
Selects the items or settings.

4 **CLEAR button (33, 34, 35, 41)**
Press to return to the continuous play etc.

5 **VOCAL SUPPORT button (53)**
Turns on and off the Vocal Support function in karaoke mode.

6 **VOCAL button (52)**
Turns on and off the Vocal function in karaoke mode.

7 **GUIDE MELODY button (51)**
Turns on and off the guide melody in karaoke mode.

8 **VOCAL SELECT button (53)**
Selects the vocal in karaoke mode.

9 **EFFECT MODE/DO buttons (55)**
Press to insert applause with or without cheers while playing karaoke.

10 **FIRST VERSE button (58)**
Plays only first verse of the karaoke songs.

11 **AUTO PAUSE button (54)**
Pauses playing at the end of each track in karaoke mode

12 **|◀◀/▶▶|PREV/NEXT buttons (16)**
Press to go to the next chapter or track, or to go back to the previous chapter or track.

13 **▷PLAY/SELECT button (15)**
Plays a disc.

14 **TITLE button (19)**
Displays the title menu on the TV screen.

15 **DISPLAY button (23)**
Displays the Control Menu display on the TV screen to set or adjust the items.

16 **←/↑/↓/→/ ENTER buttons**
Selects and executes the items or settings.

17 **I/⏻ (POWER) button (15)**
Turns on and off the power of the player.

18 **KARAOKE SURROUND button (55)**
Gives surround effect in karaoke mode.

19 **KEY CONTROL buttons (51)**
Press to adjust the key to suit the vocal in karaoke mode.

20 **ENTER button**
Executes the items or settings.

21 **KARAOKE PON button (57)**
Reduces the singer's voice recorded on the disc in karaoke mode.

22 **KARAOKE STAR button (57)**
Gives the effect of depth to the vocal voice.

23 **CHORUS MEDLEY button (58)**
Press to start the Chorus Medley playback in karaoke mode.

24 **RESERVE button (56)**
Displays the "RESERVE" display in karaoke mode.

25 **◀◀/▶▶ SCAN buttons (17)**
Locates a point while monitoring the picture.

26 **■STOP button (16, 18)**
Stops playing a disc.

27 **❚❚PAUSE button (16)**
Pauses playing a disc.

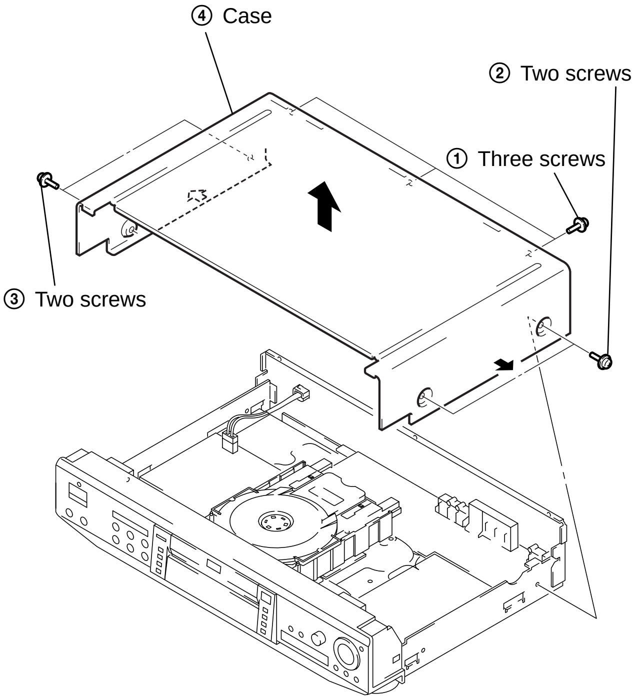
28 **DVD MENU button (19)**
Displays the DVD menu on the TV screen.

29 **↶RETURN button (20, 24)**
Press to return to the previously selected screen, etc.

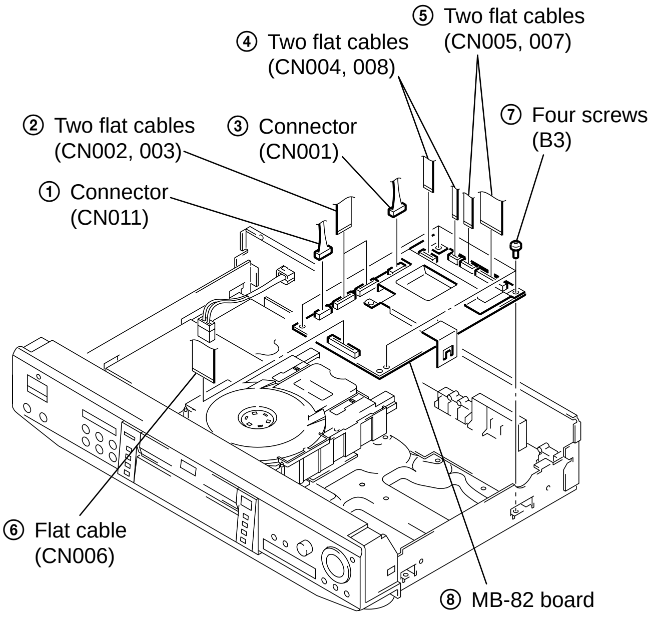
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

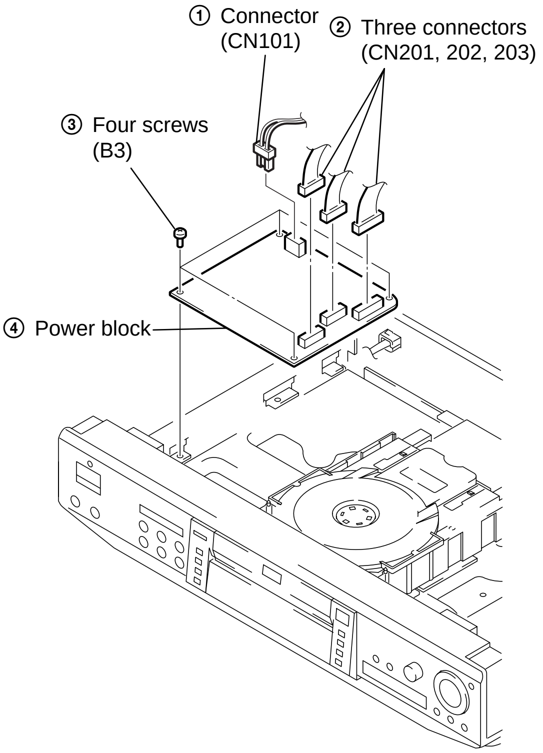
2-1. CASE REMOVAL



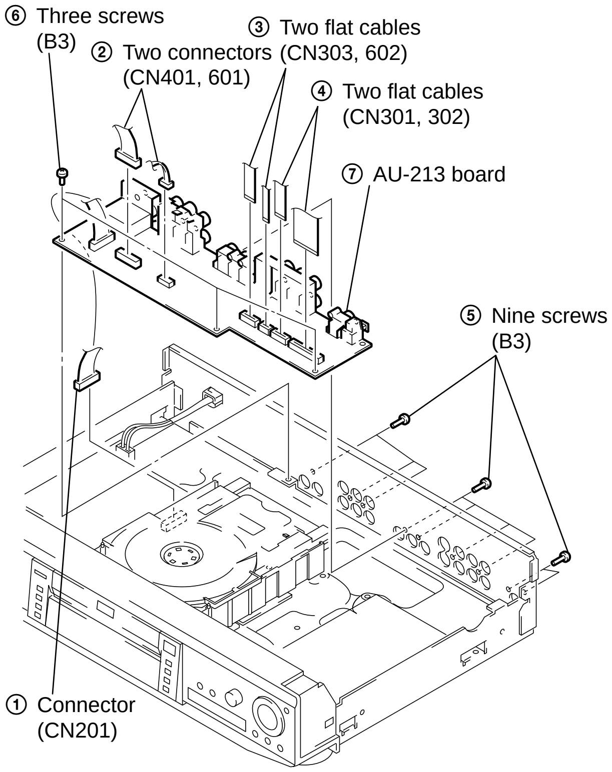
2-2. MB-82 BOARD REMOVAL



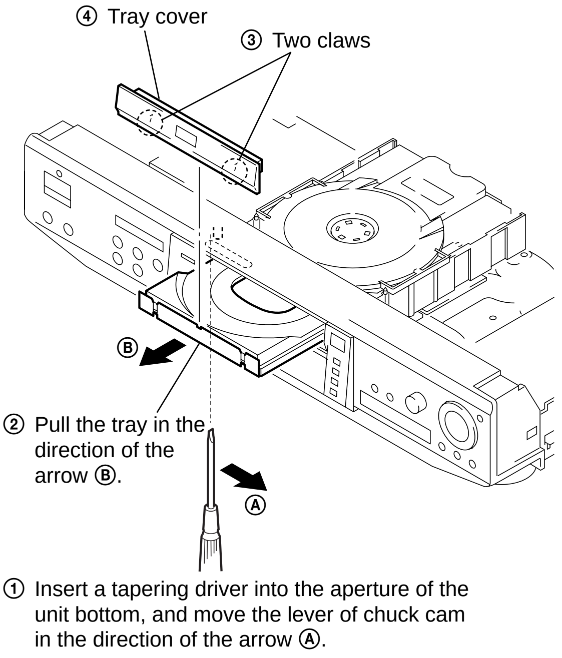
2-3. POWER BLOCK REMOVAL



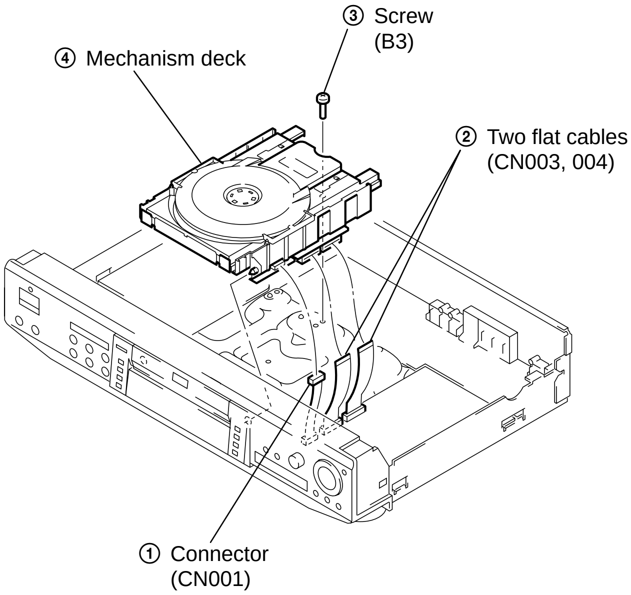
2-4. AU-213 BOARD REMOVAL



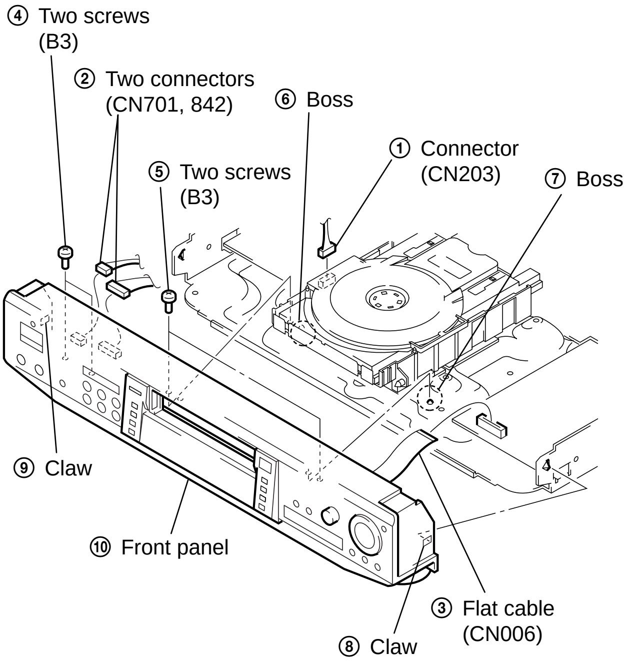
2-5. TRAY COVER REMOVAL



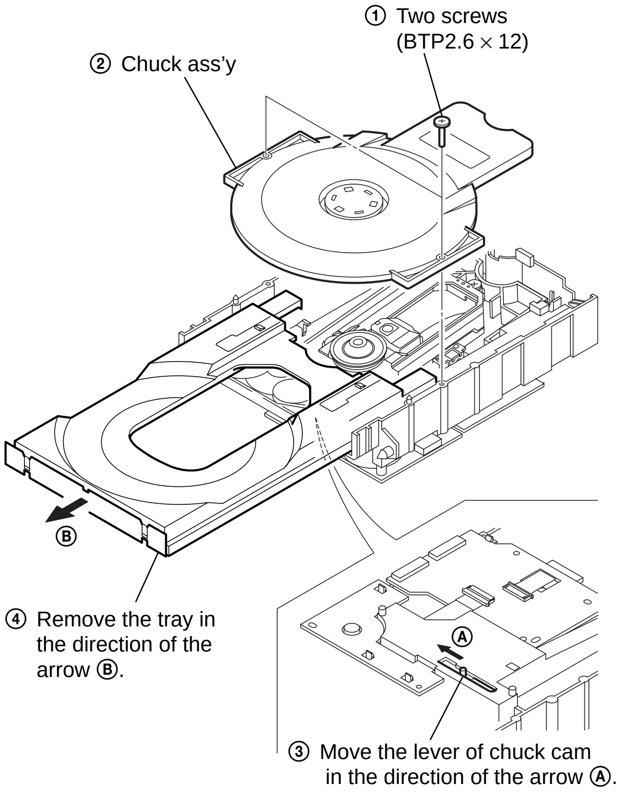
2-7. MECHANISM DECK REMOVAL



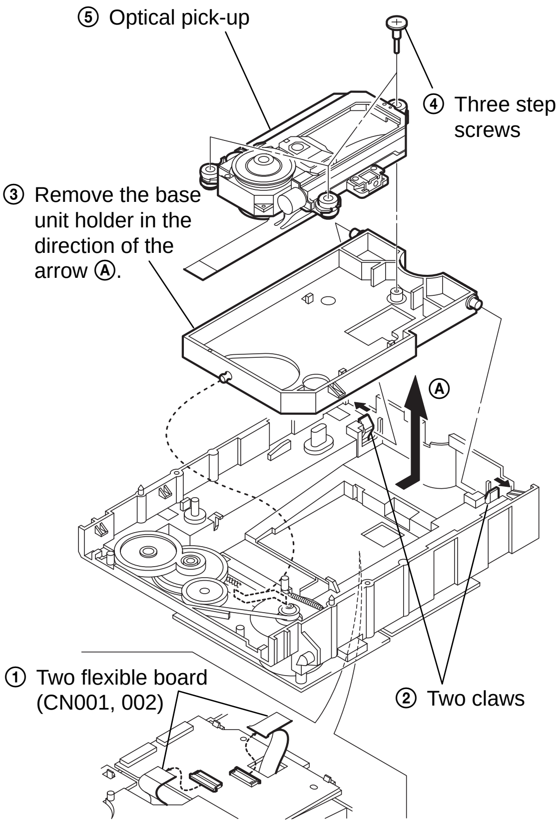
2-6. FRONT PANEL REMOVAL



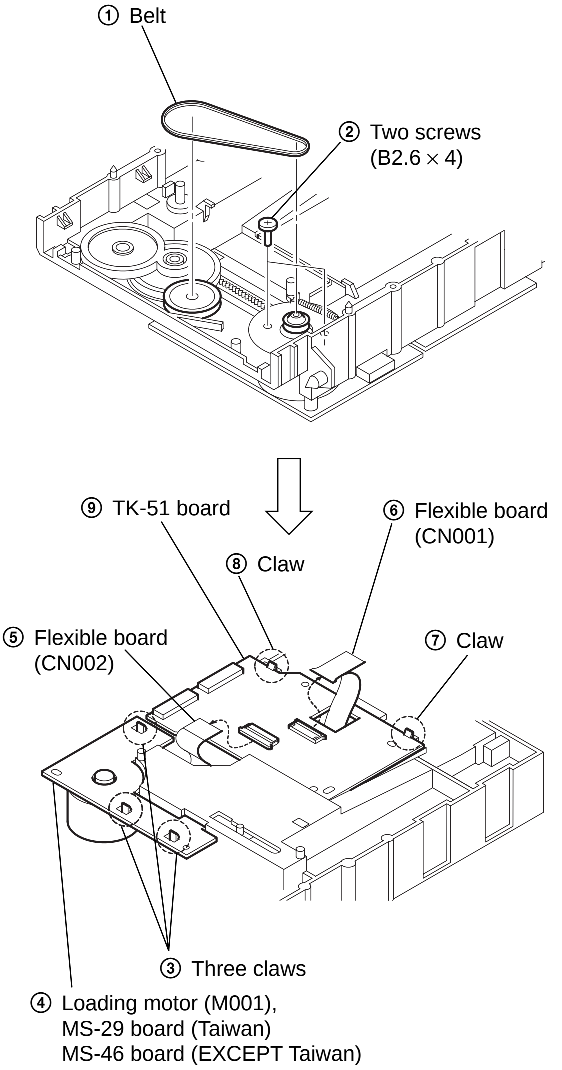
2-8. TRAY REMOVAL



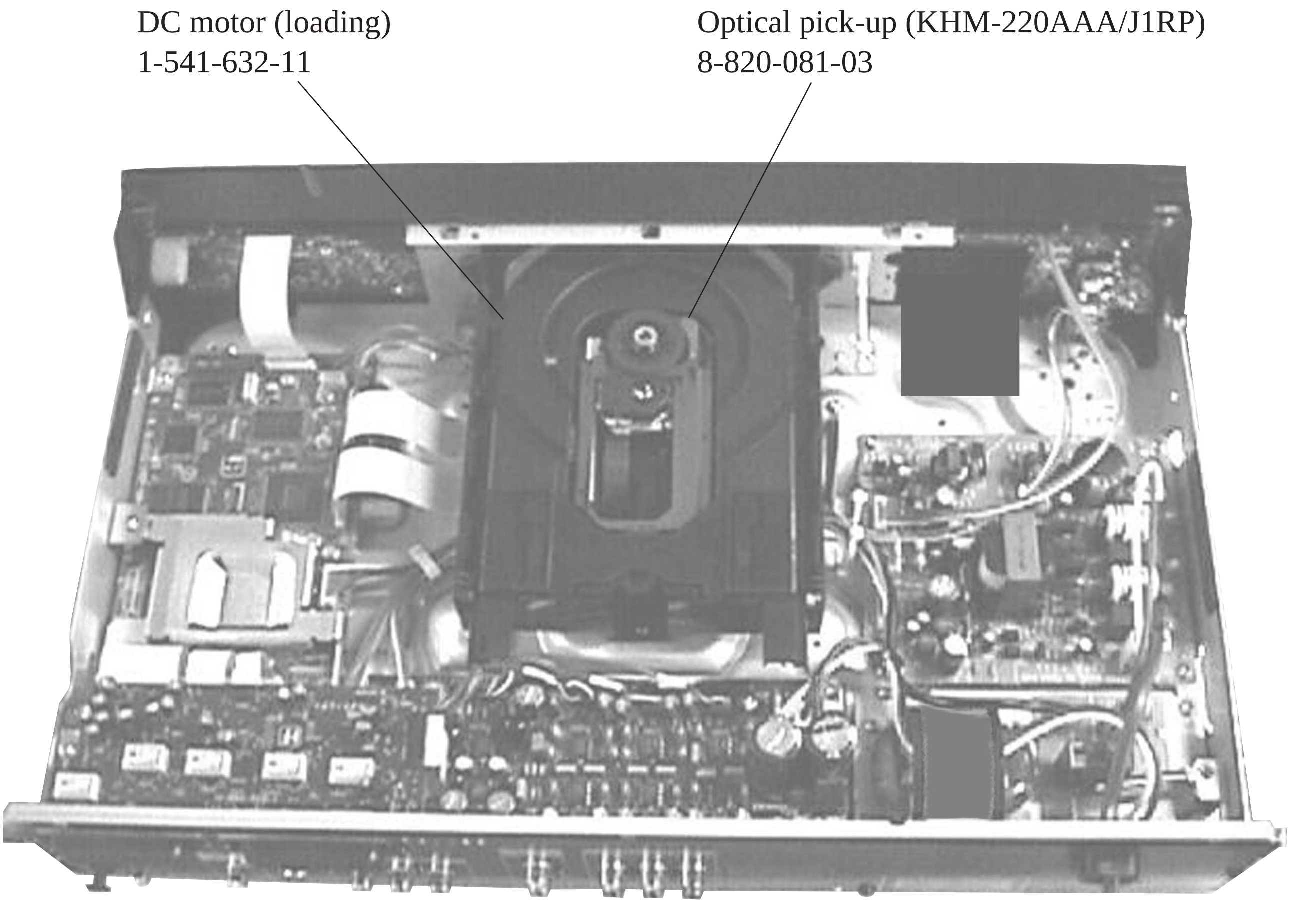
2-9. OPTICAL PICK-UP REMOVAL



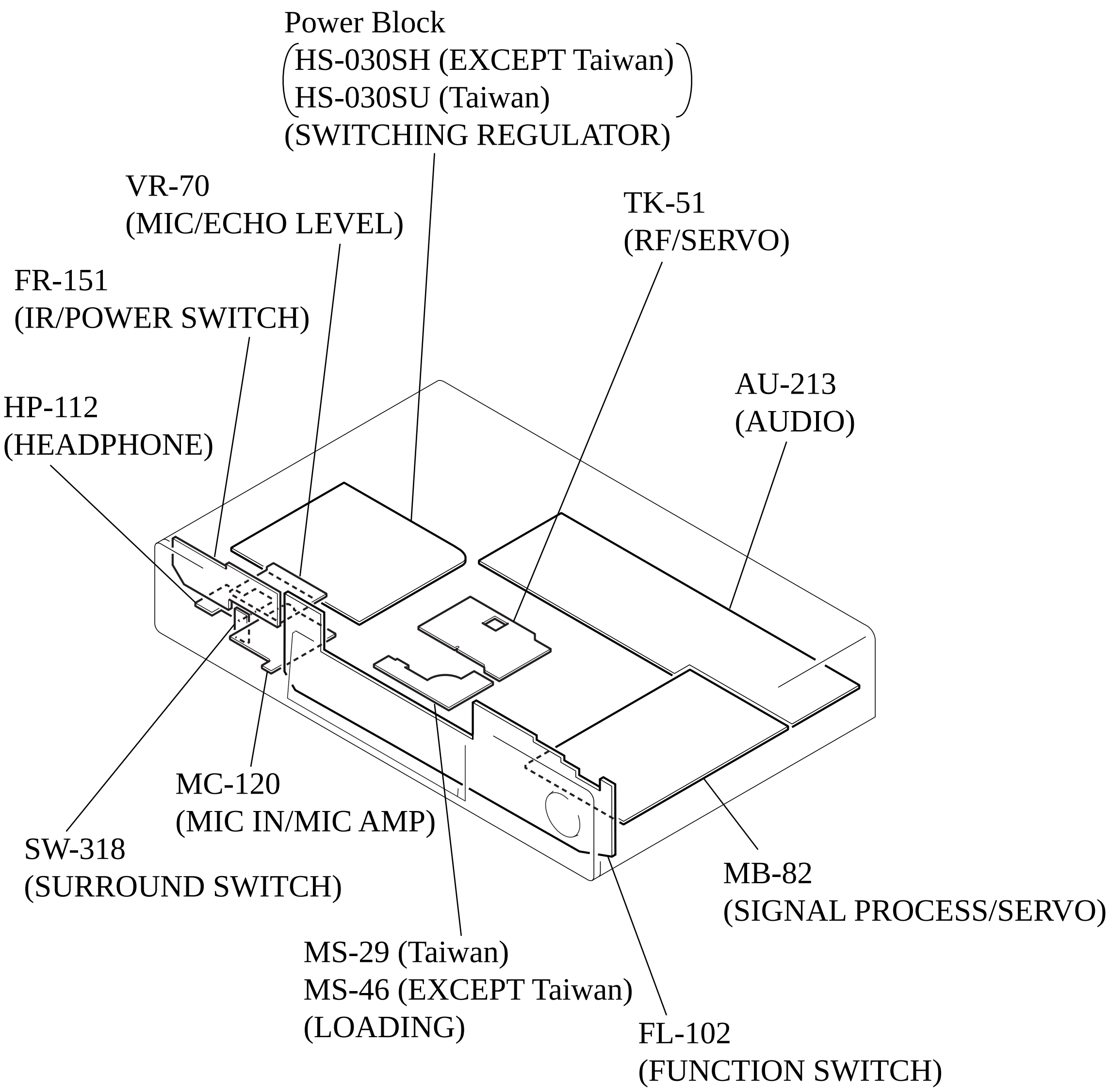
2-10. BELT, LOADING MOTOR (M001), MS-29/46, TK-51 BOARD REMOVAL



2-11. INTERNAL VIEW

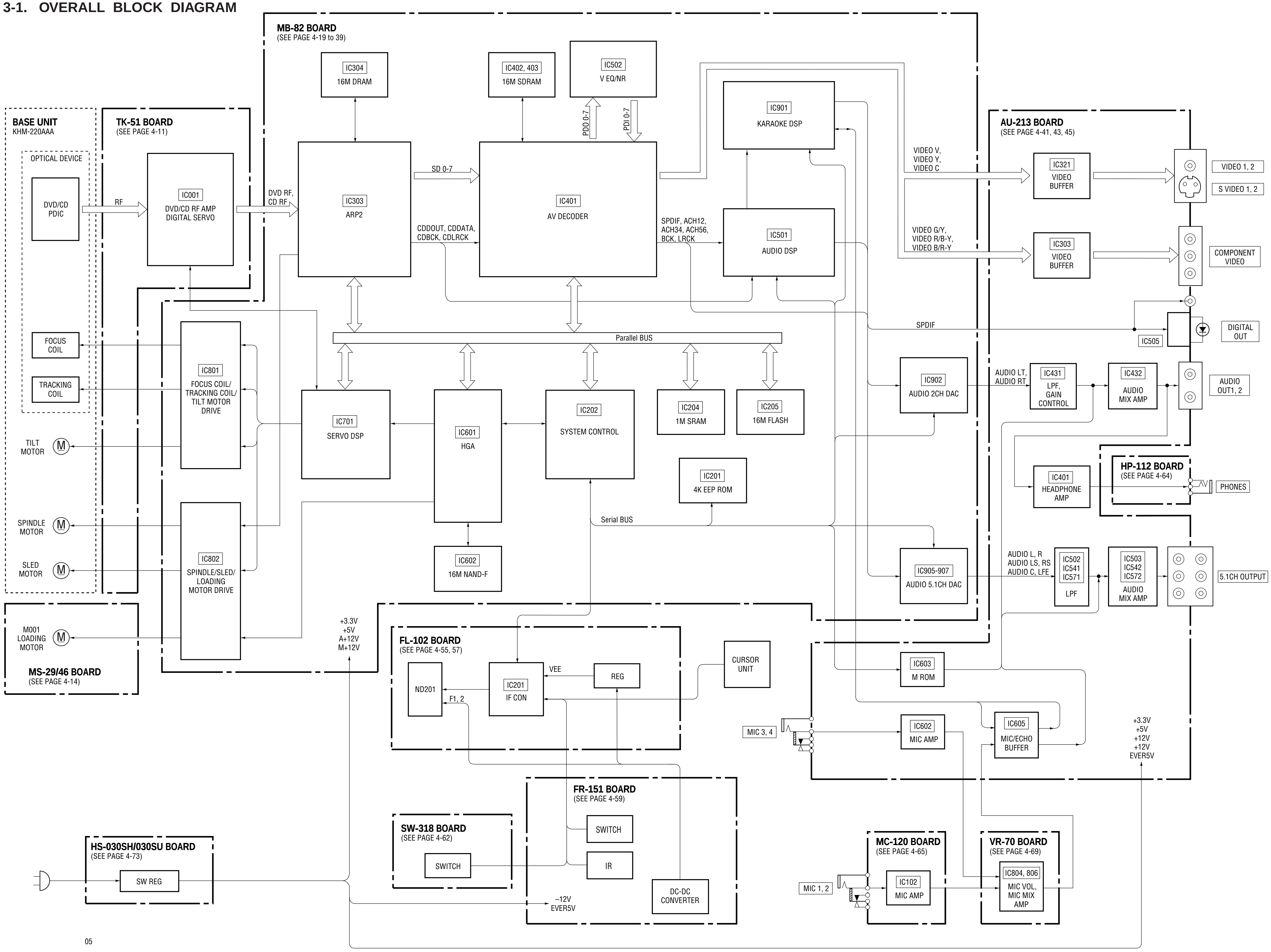


2-12. CIRCUIT BOARDS LOCATION

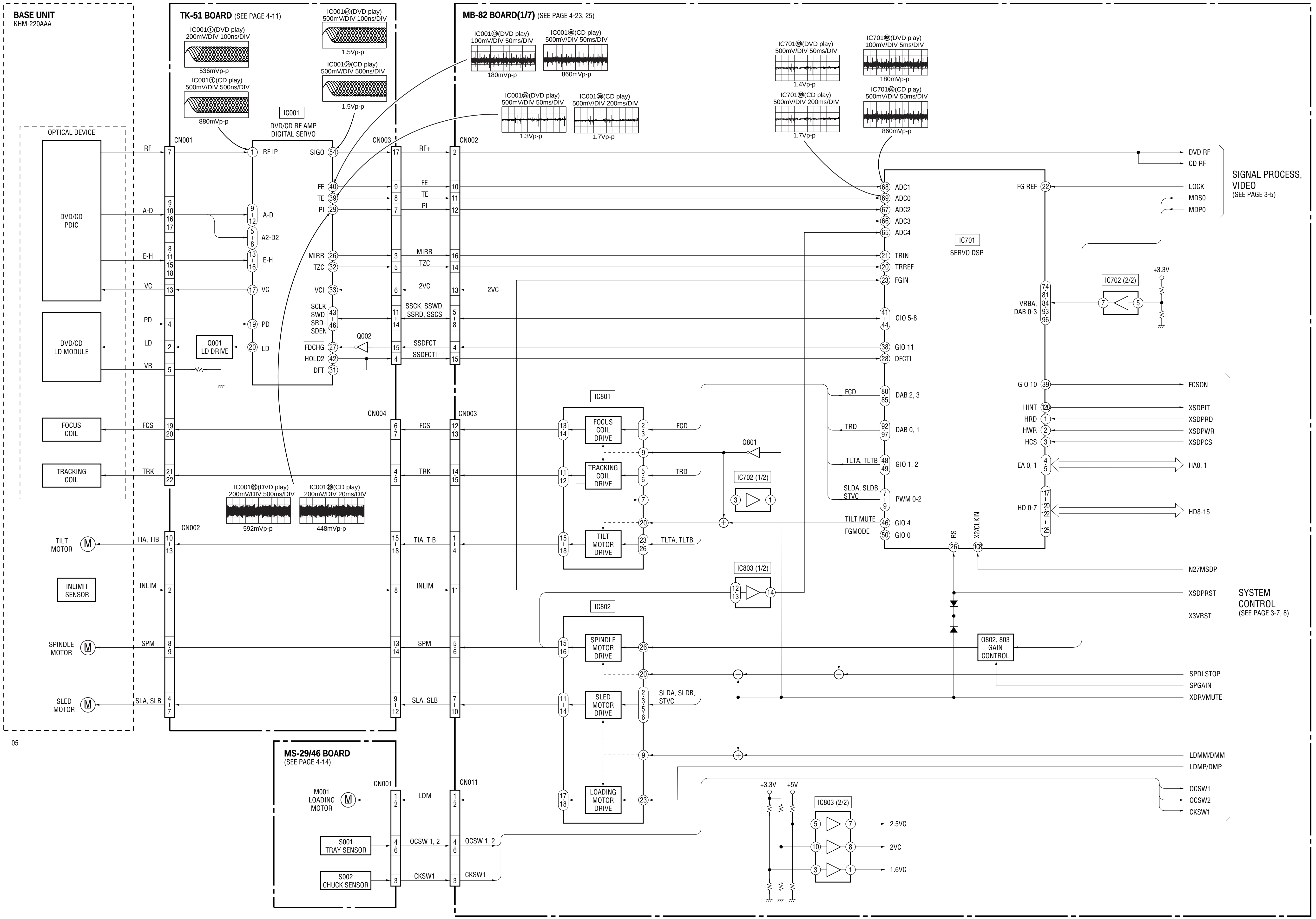


SECTION 3
BLOCK DIAGRAMS

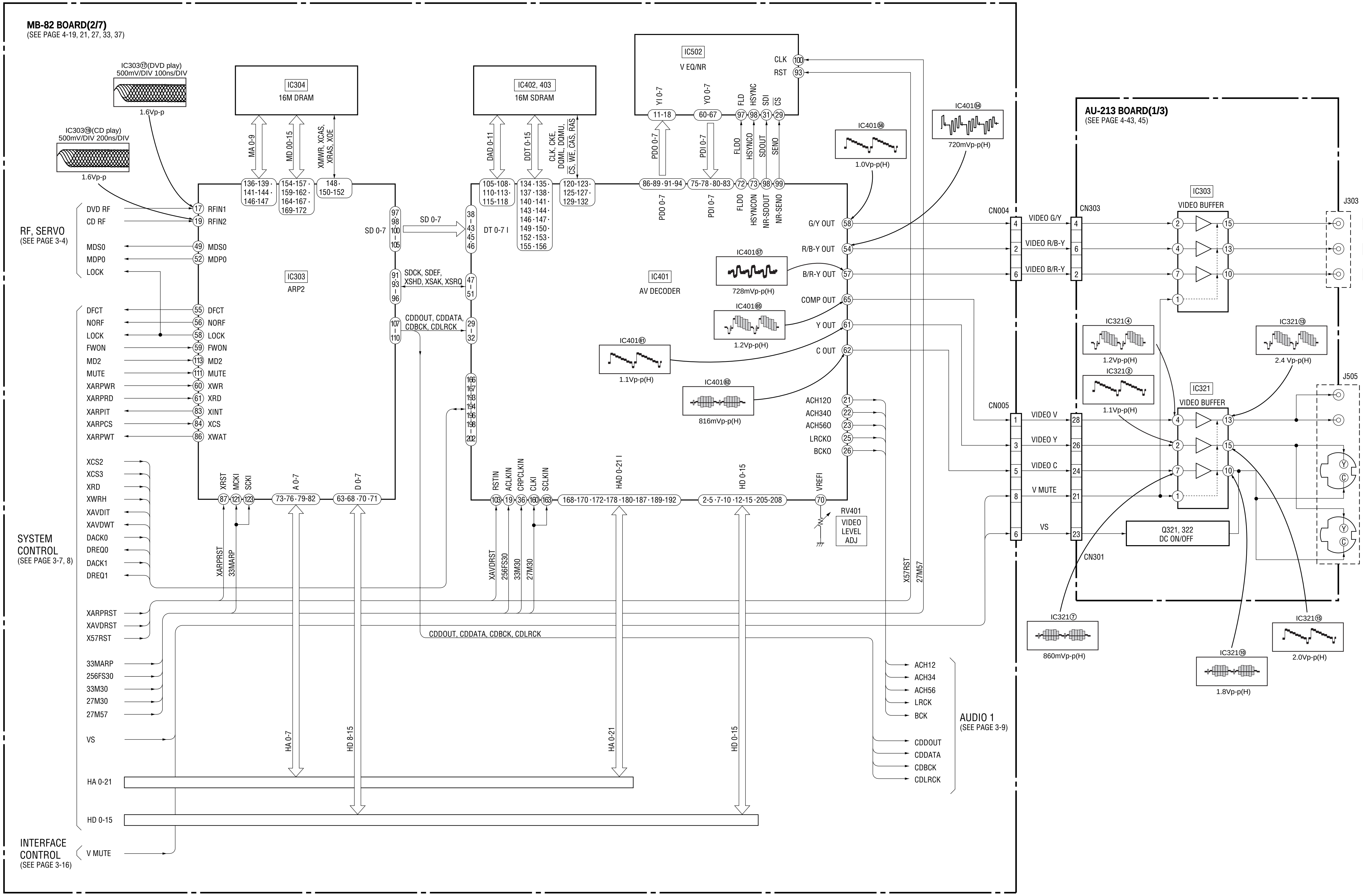
3-1. OVERALL BLOCK DIAGRAM



3-2. RF/SERVO BLOCK DIAGRAM

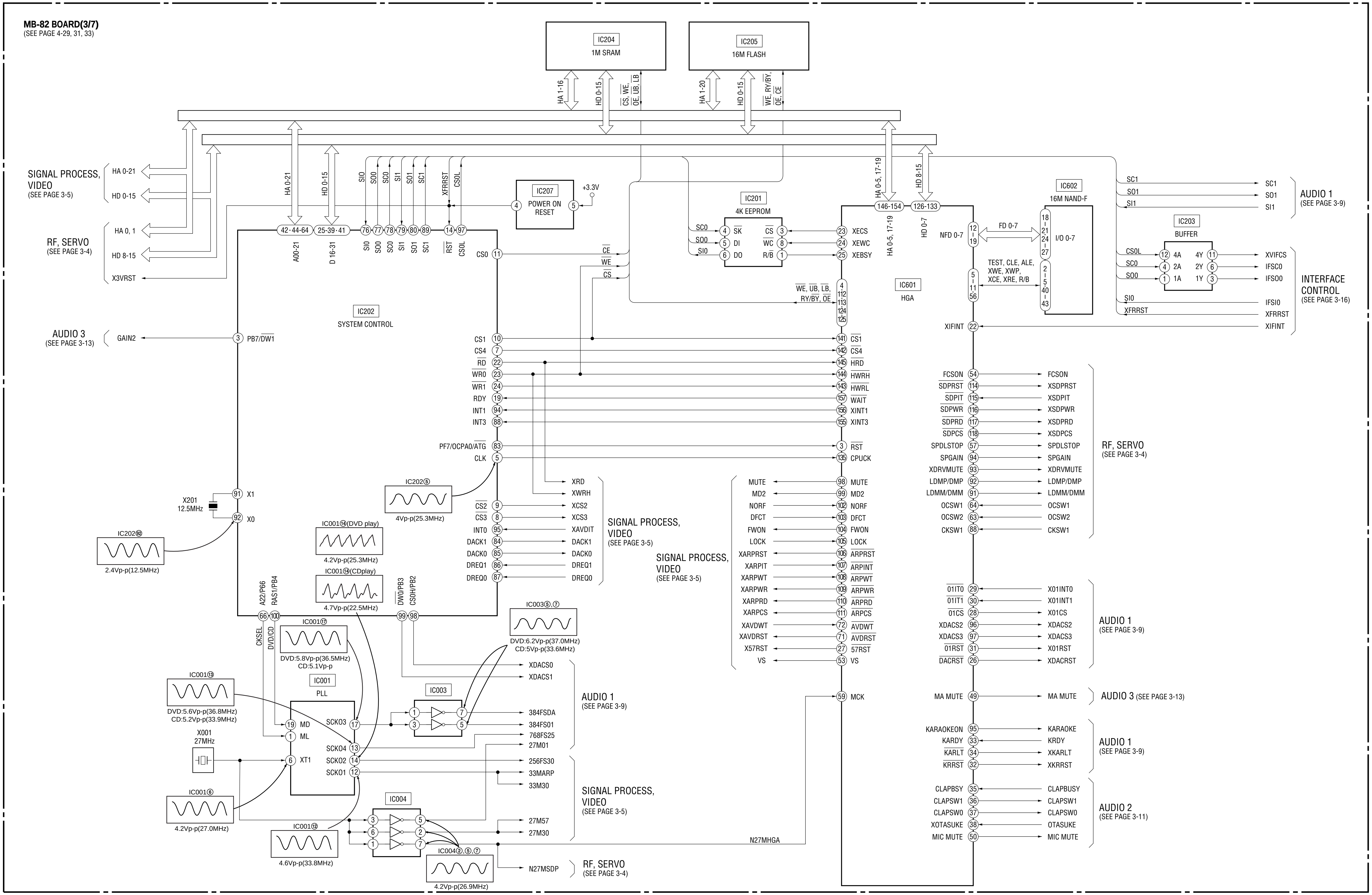


3-3. SIGNAL PROCESS/VIDEO BLOCK DIAGRAM



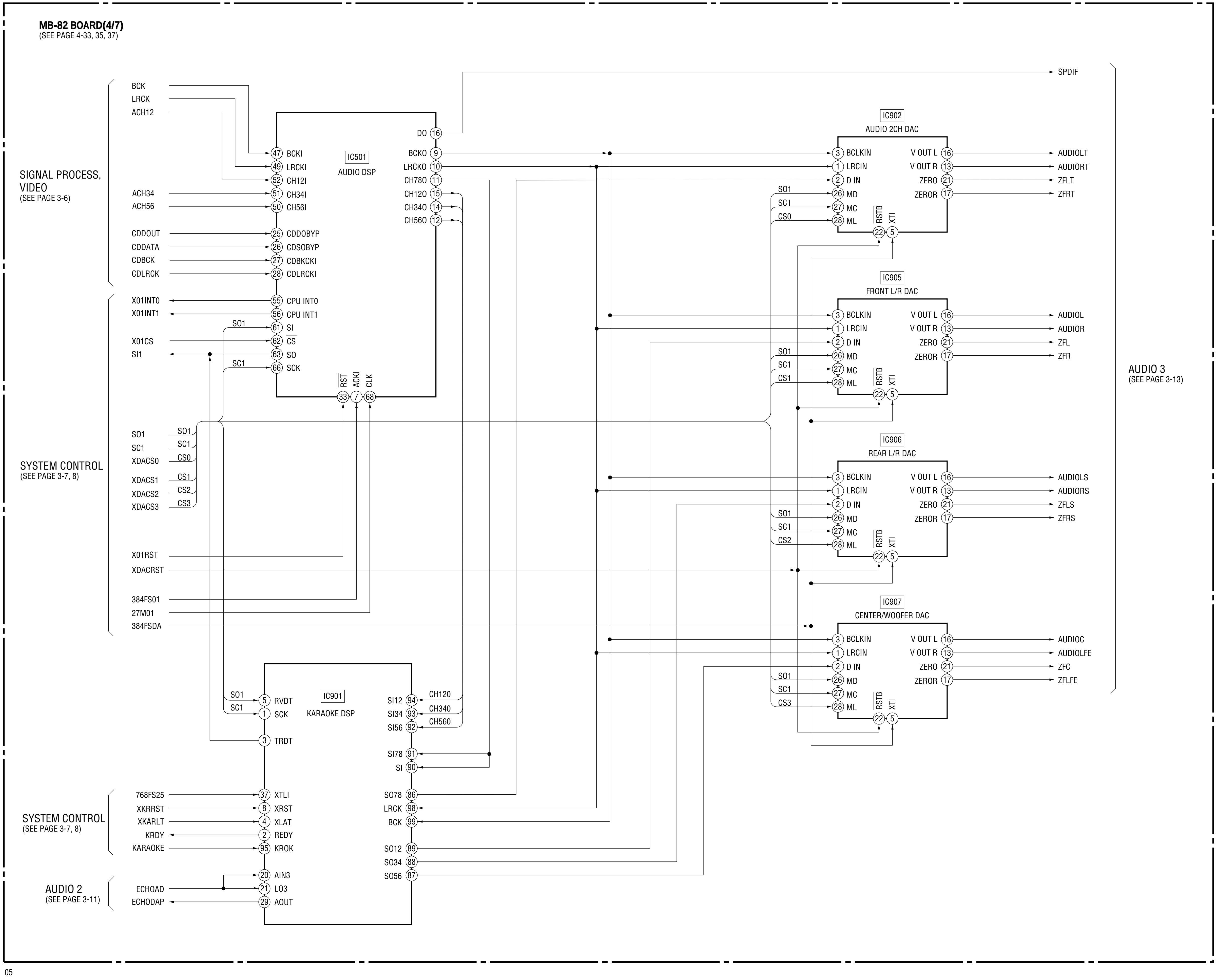
05

3-4. SYSTEM CONTROL BLOCK DIAGRAM

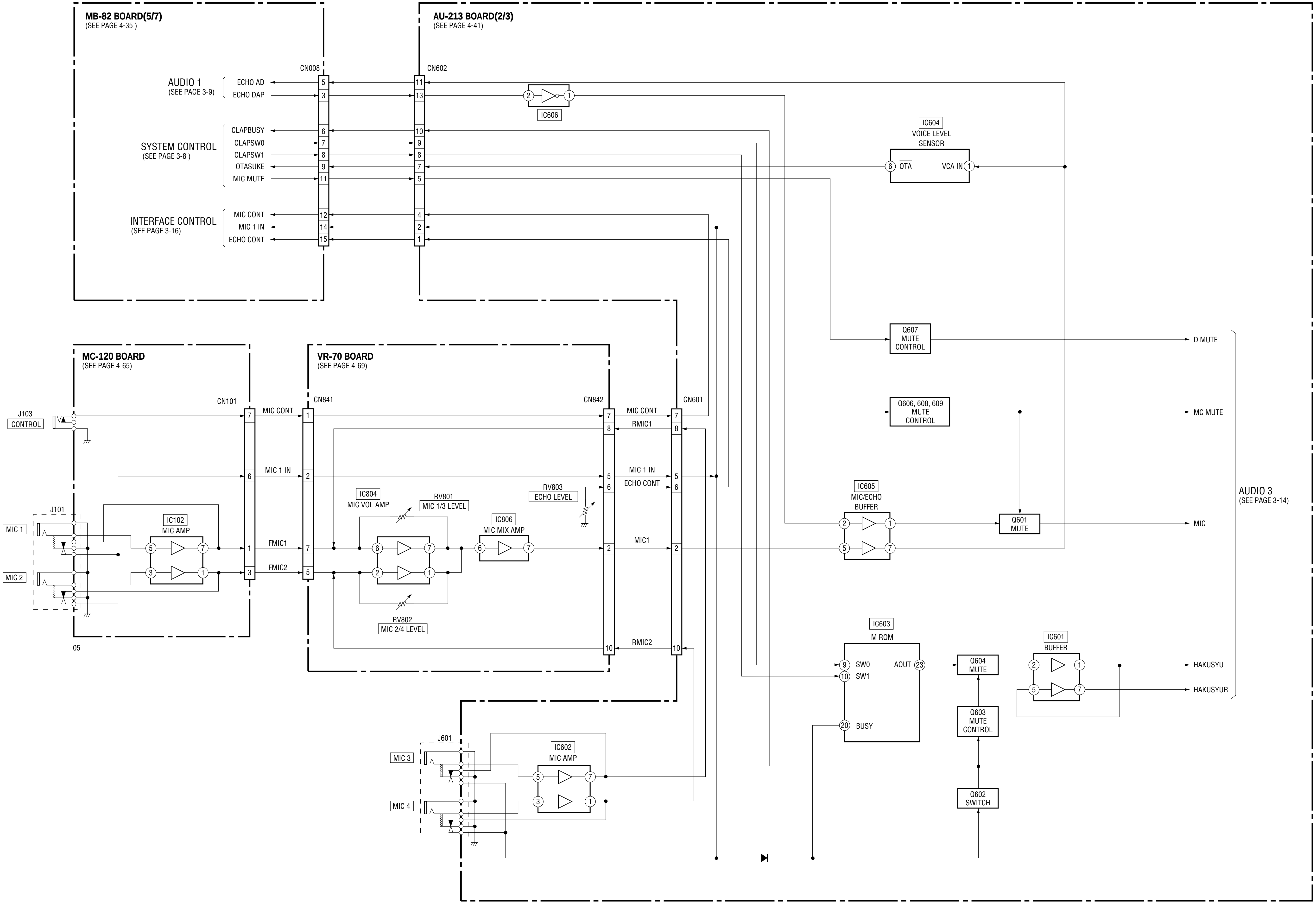


05

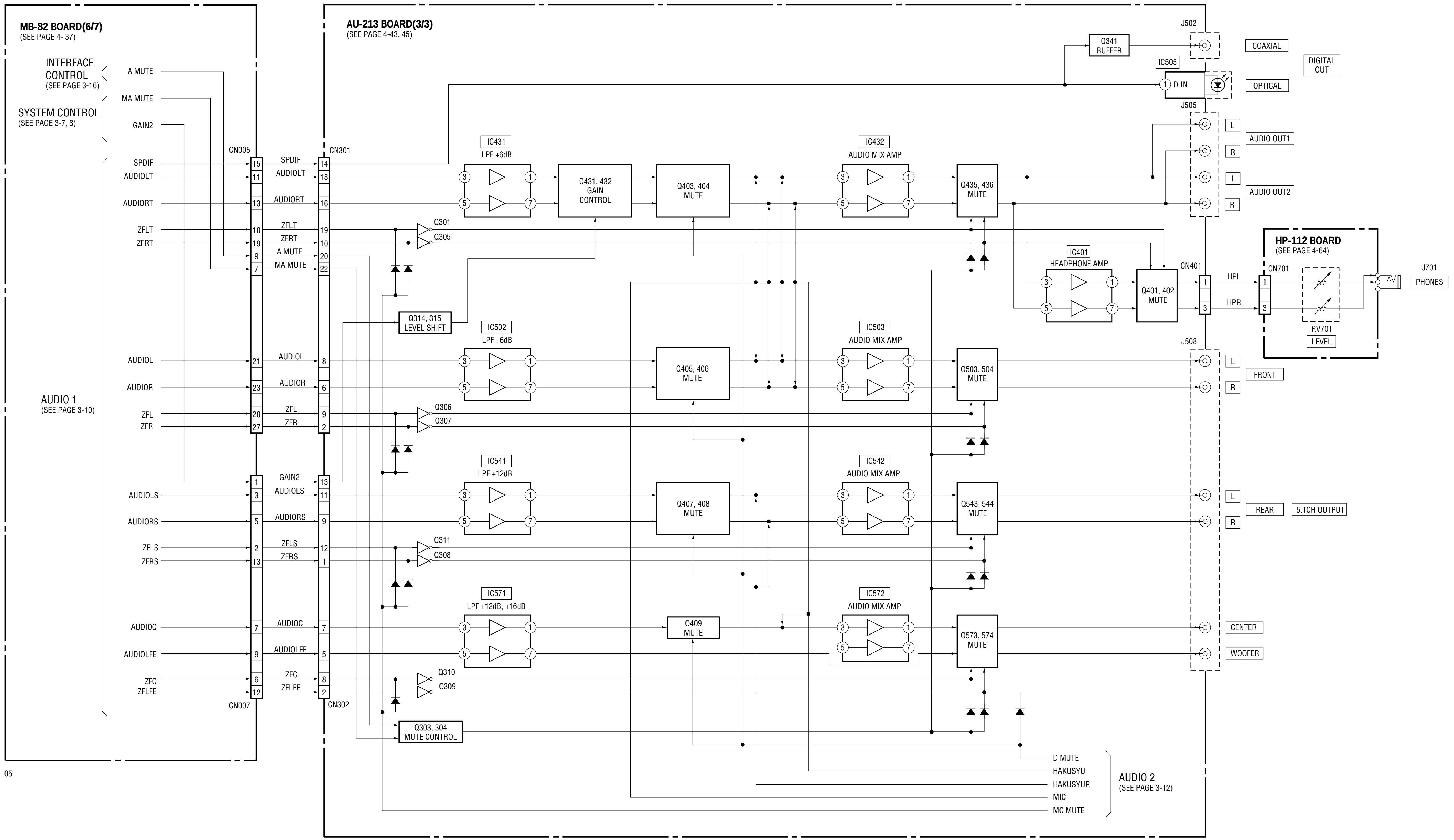
3-5. AUDIO (1) BLOCK DIAGRAM



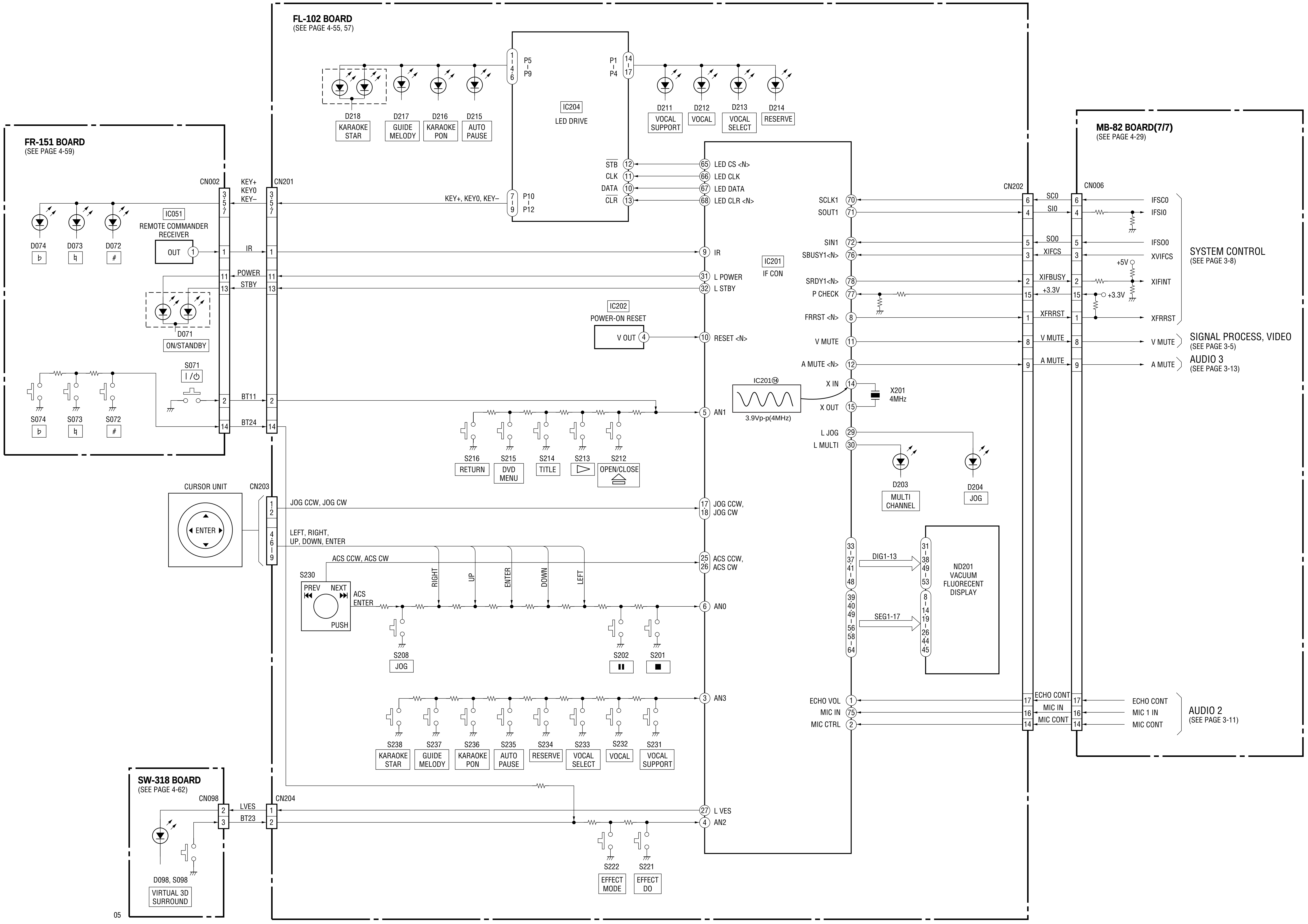
3-6. AUDIO (2) BLOCK DIAGRAM



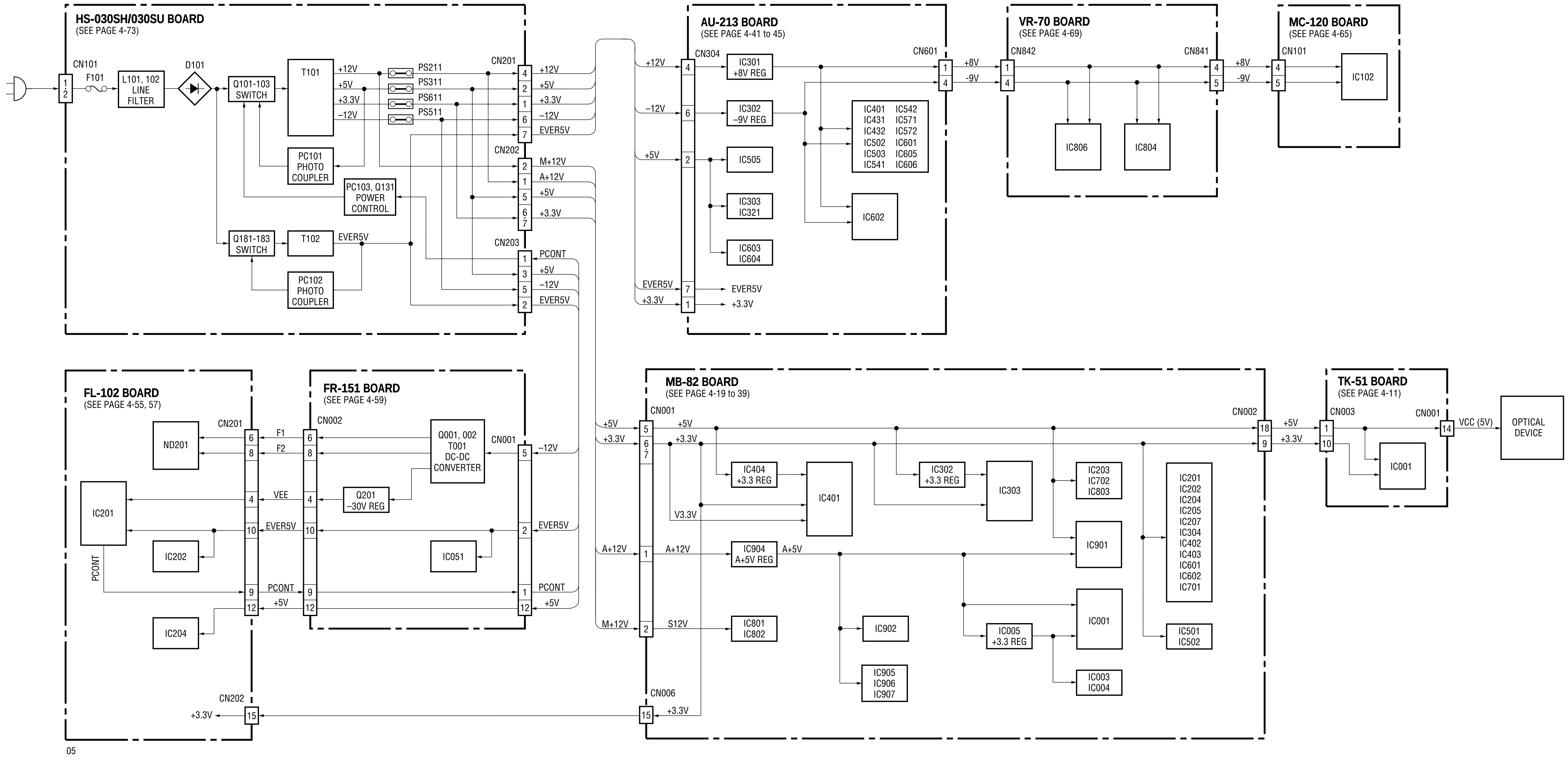
3-7. AUDIO (3) BLOCK DIAGRAM



3-8. INTERFACE CONTROL BLOCK DIAGRAM



3-9. POWER BLOCK DIAGRAM



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block)

For printed wiring boards:
- ○——— : indicates a lead wire mounted on the component side.
- ●——— : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- ░░░ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated)

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

For schematic Diagram:
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4 W (Chip resistors : 1/10 W) unless otherwise specified.
  kΩ : 1000 Ω, MΩ : 1000 kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- [resistor symbol] : nonflammable resistor.
- [resistor symbol] : fusible resistor.
- [ ] : panel designation.
- △ : internal component.
- [ ] : adjustment for repair.
- B+ : B+ Line.
- B– : B– Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signals on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10 MΩ).
- Voltage variations may be noted due to normal production tolerances.

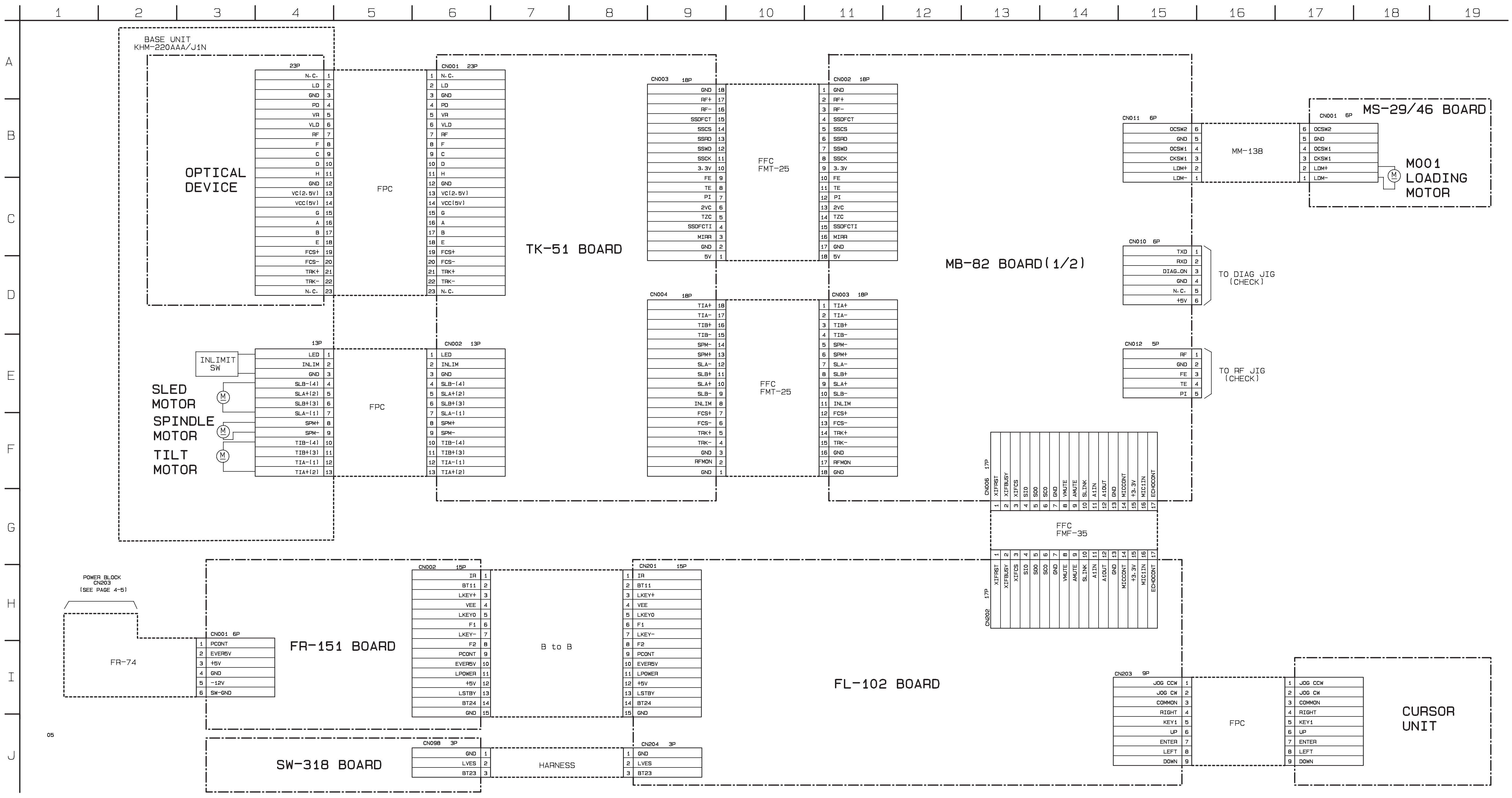
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Abbreviation
  CH : Chinese
  TW : Taiwan

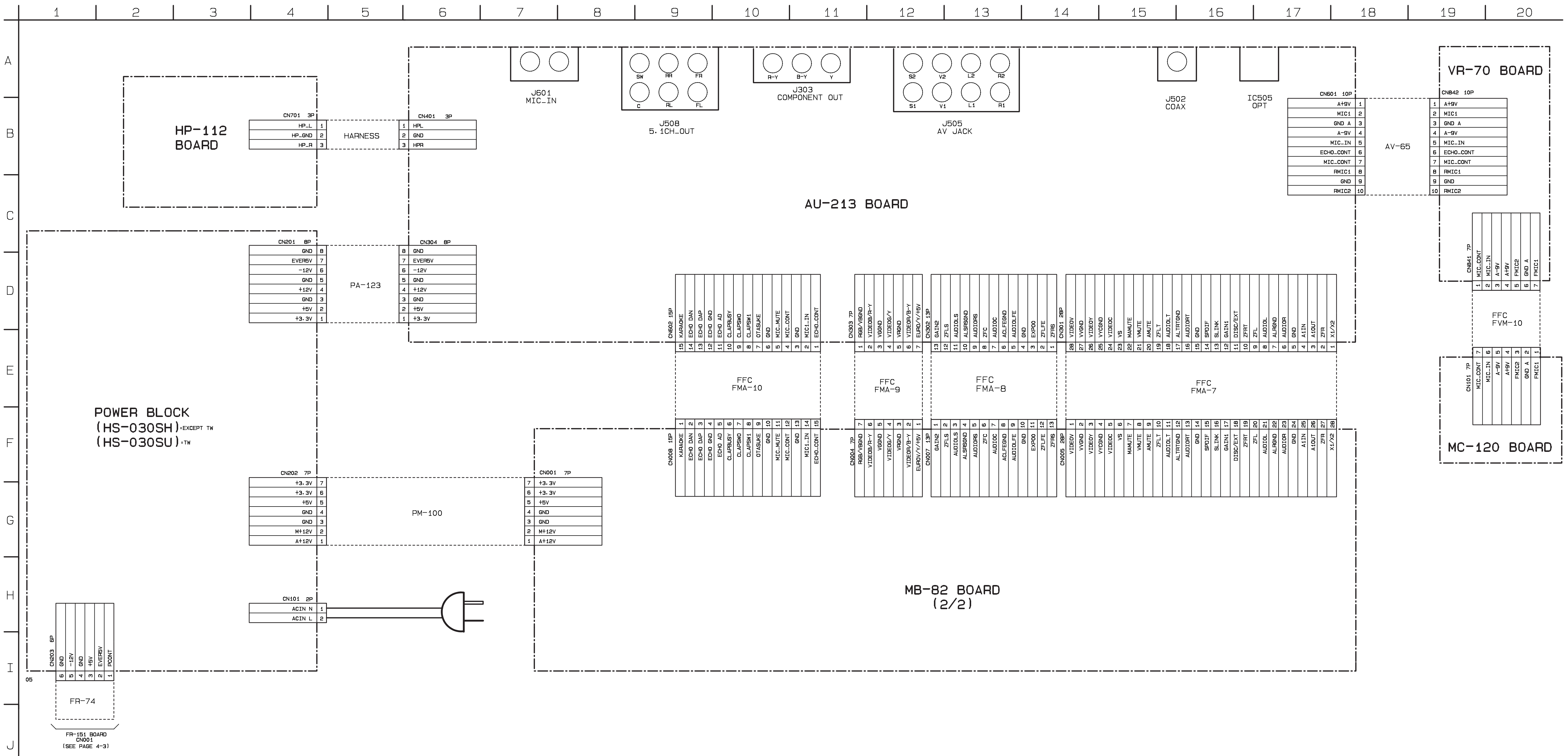
4-1. FRAME SCHEMATIC DIAGRAM

FRAME (1) SCHEMATIC DIAGRAM



FRAME (1/2)

FRAME (2) SCHEMATIC DIAGRAM



FRAME (2/2)

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

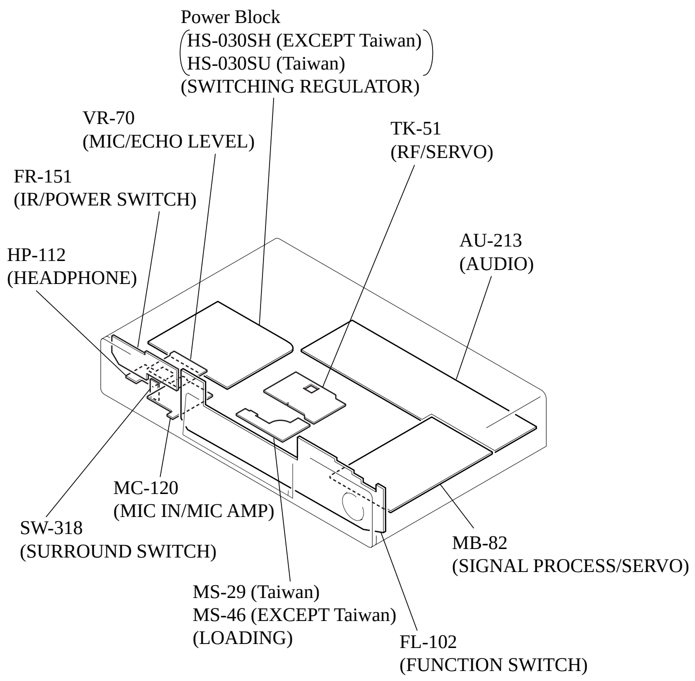
TK-51 (RF/SERVO) PRINTED WIRING BOARD

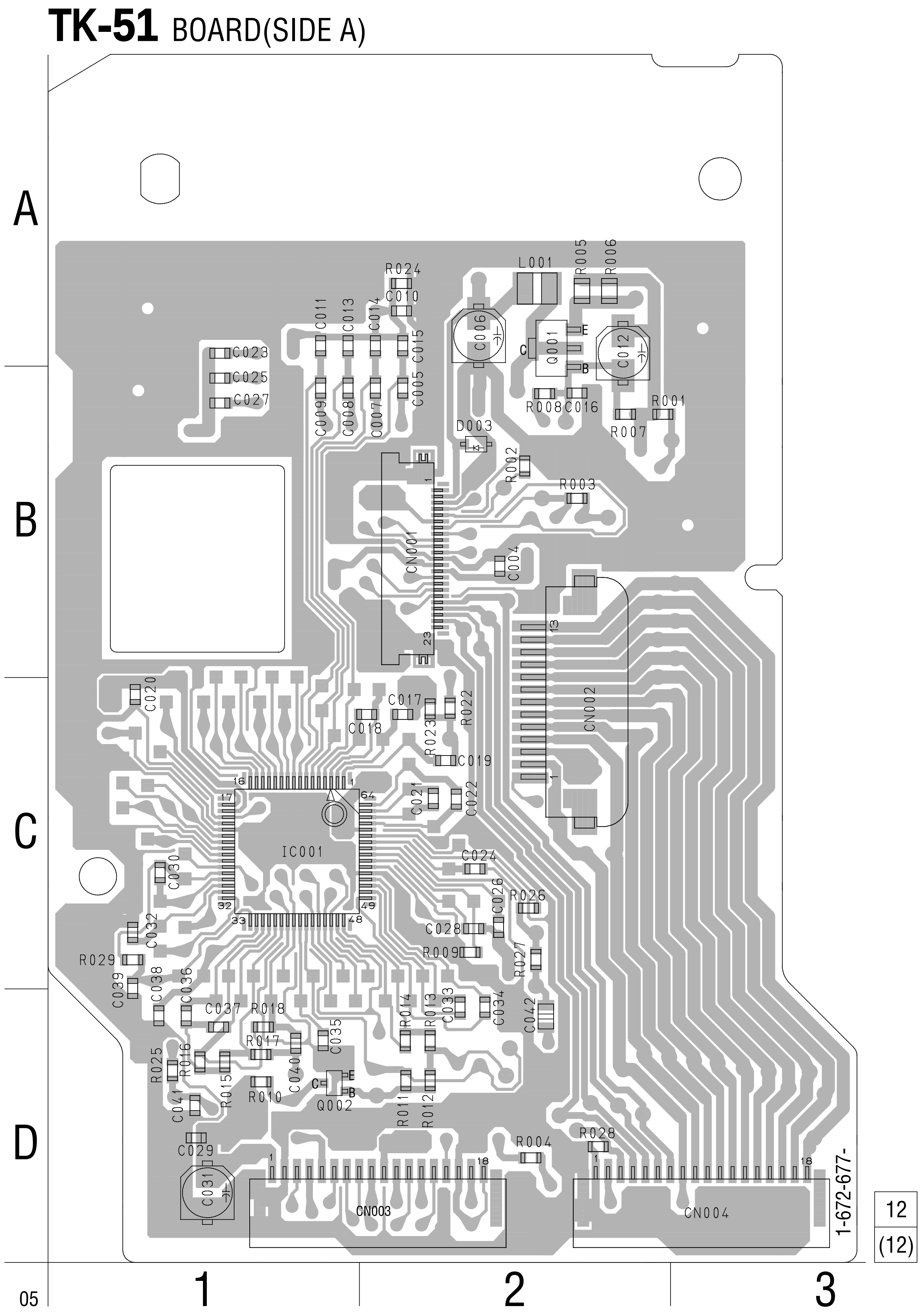
– Ref. No.: TK-51 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

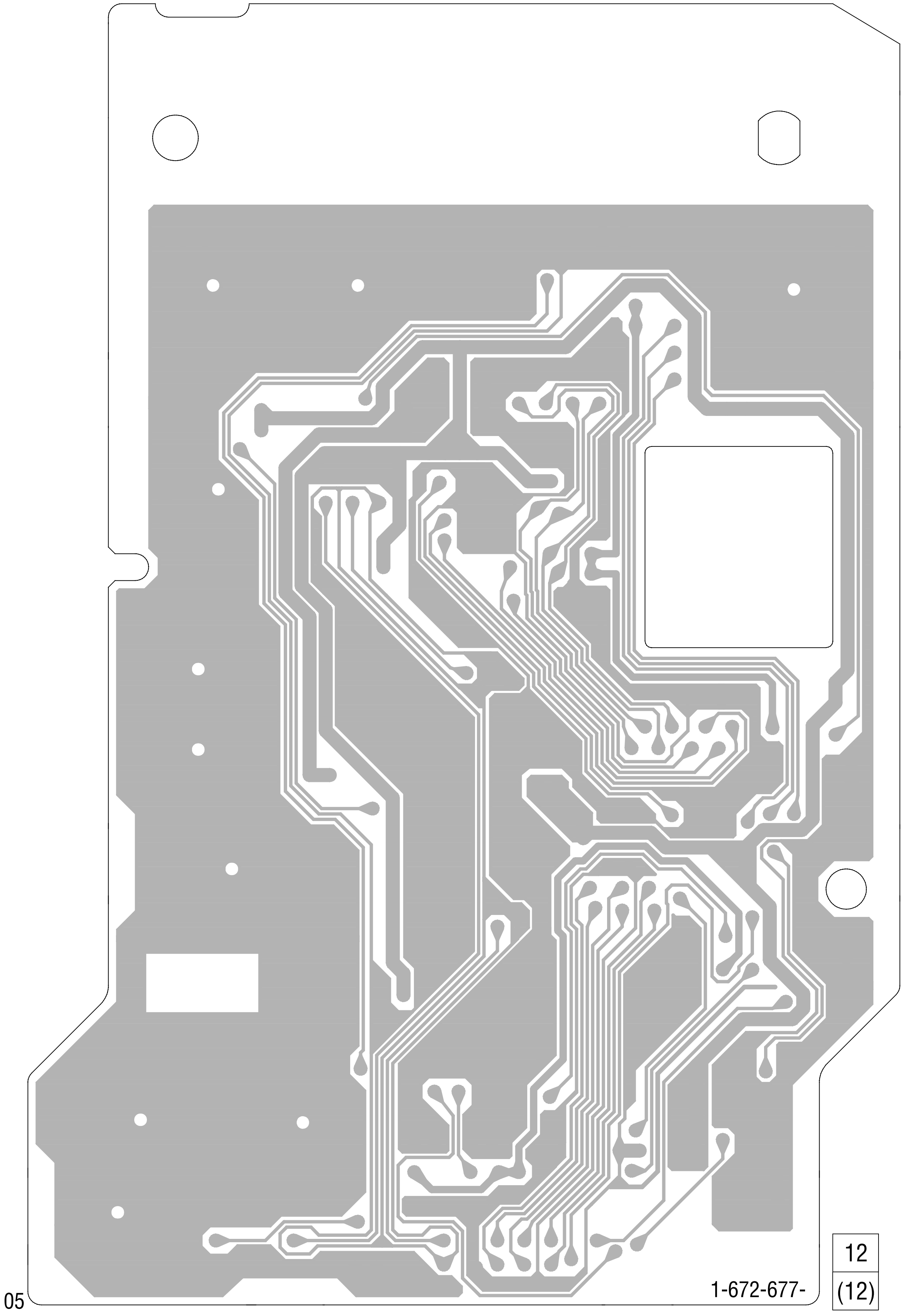
TK-51 BOARD (SIDE A)

CN001	B-2
CN002	C-2
CN003	D-2
CN004	D-3
D003	B-2
IC001	C-1
Q001	A-2
Q002	D-1



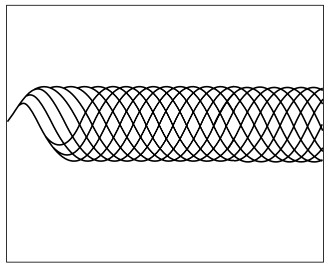


TK-51 BOARD(SIDE B)



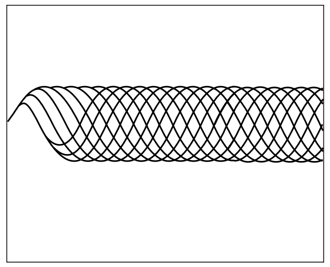
• **Waveforms**

❶ IC001 ① (DVD play)
200 mV/DIV 100 ns/DIV



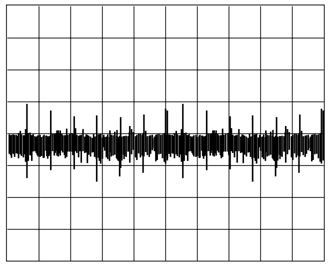
536 mVp-p

❷ IC001 ① (CD play)
500 mV/DIV 500 ns/DIV



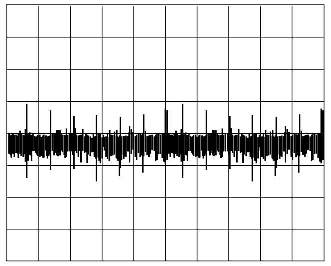
880 mVp-p

❸ IC001 ㉙ (DVD play)
200 mV/DIV 500 ms/DIV



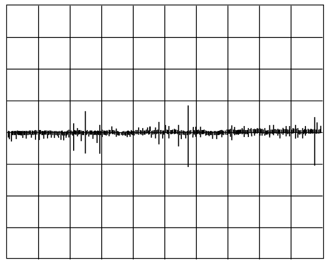
592 mVp-p

❹ IC001 ㉙ (CD play)
200 mV/DIV 20 ms/DIV



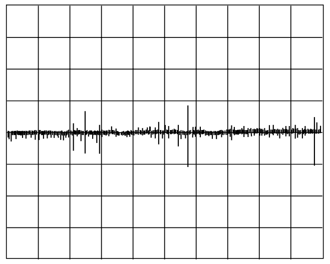
448 mVp-p

❺ IC001 ㊴ (DVD play)
500 mV/DIV 50 ms/DIV



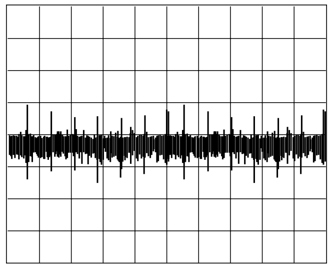
1.3 Vp-p

❻ IC001 ㊴ (CD play)
500 mV/DIV 200 ms/DIV



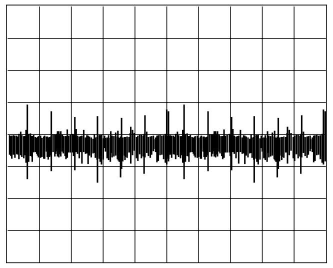
1.7 Vp-p

❼ IC001 ㊵ (DVD play)
100 mV/DIV 50 ms/DIV



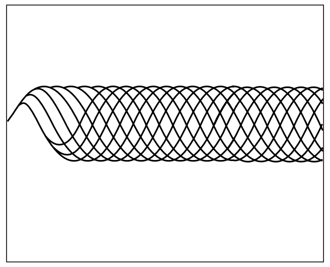
180 mVp-p

❽ IC001 ㊵ (CD play)
500 mV/DIV 50 ms/DIV



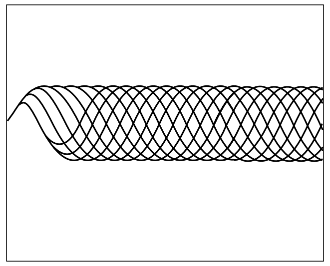
860 mVp-p

❾ IC001 ㊹ (DVD play)
500 mV/DIV 100 ns/DIV



1.5 Vp-p

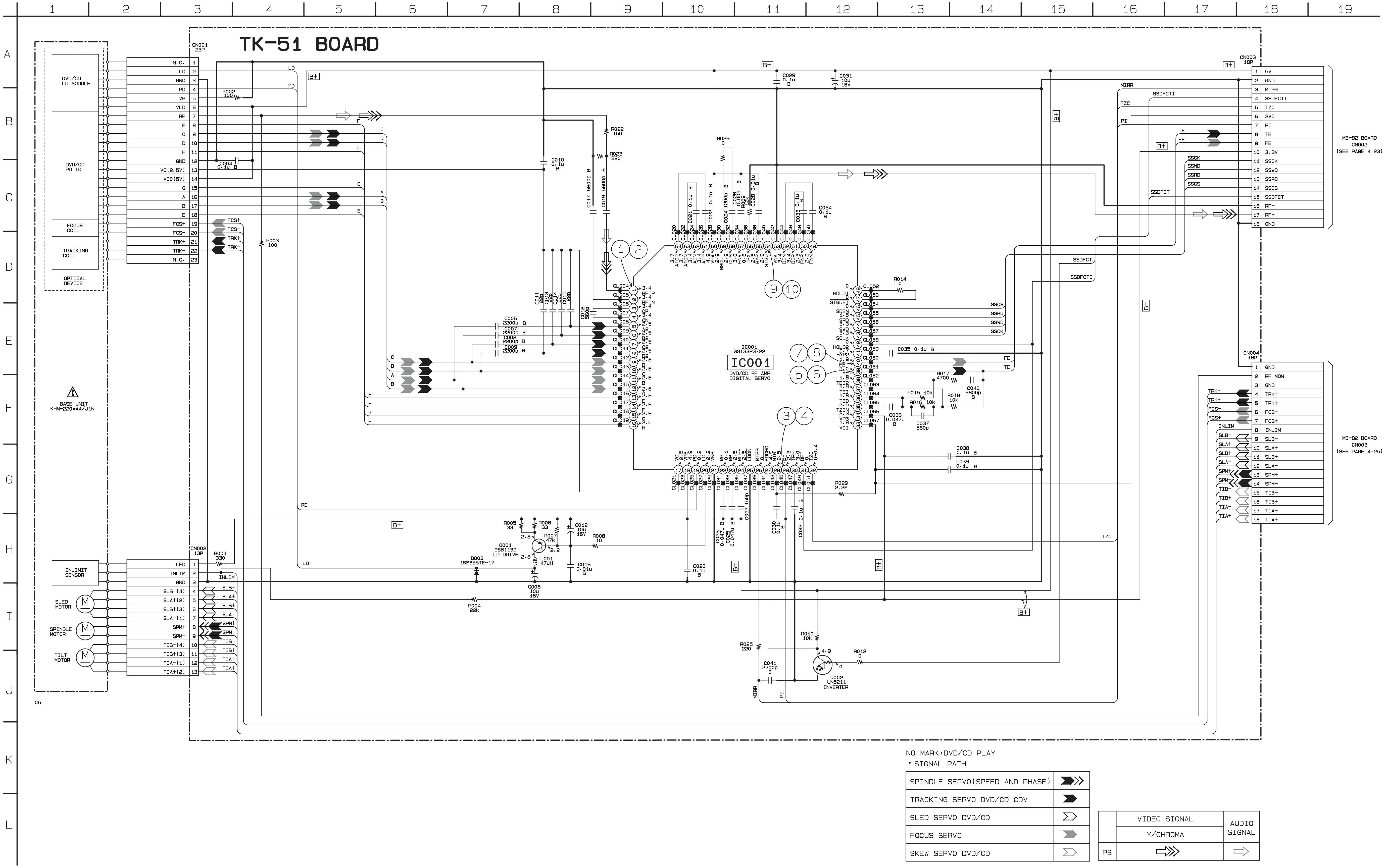
❿ IC001 ㊹ (CD play)
500 mV/DIV 500 ns/DIV



1.5 Vp-p

TK-51 (RF/SERVO) SCHEMATIC DIAGRAM • **See page 4-7 for printed wiring board and page 4-10 for waveforms.**

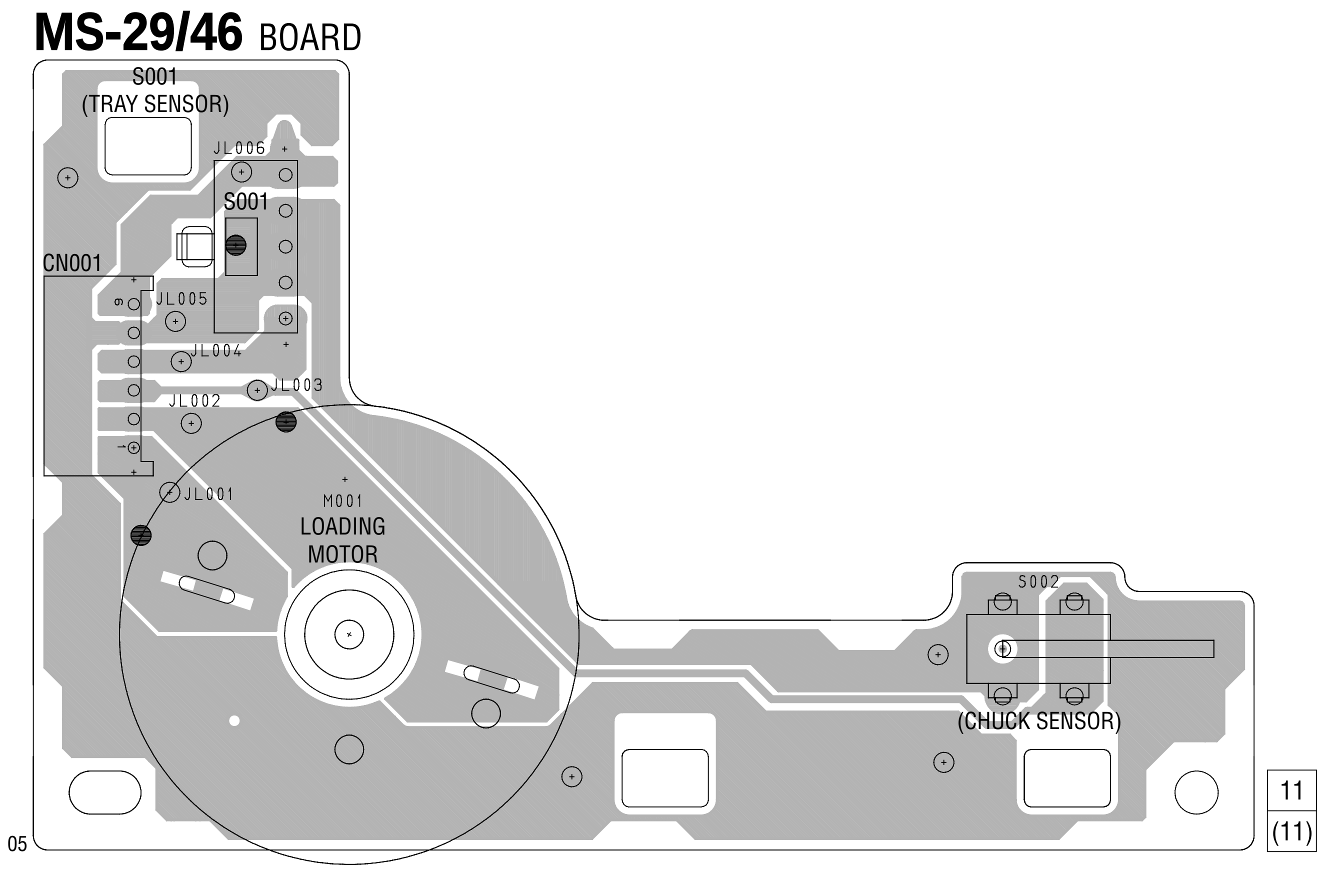
– Ref. No.: TK-51 board; 2,000 series –



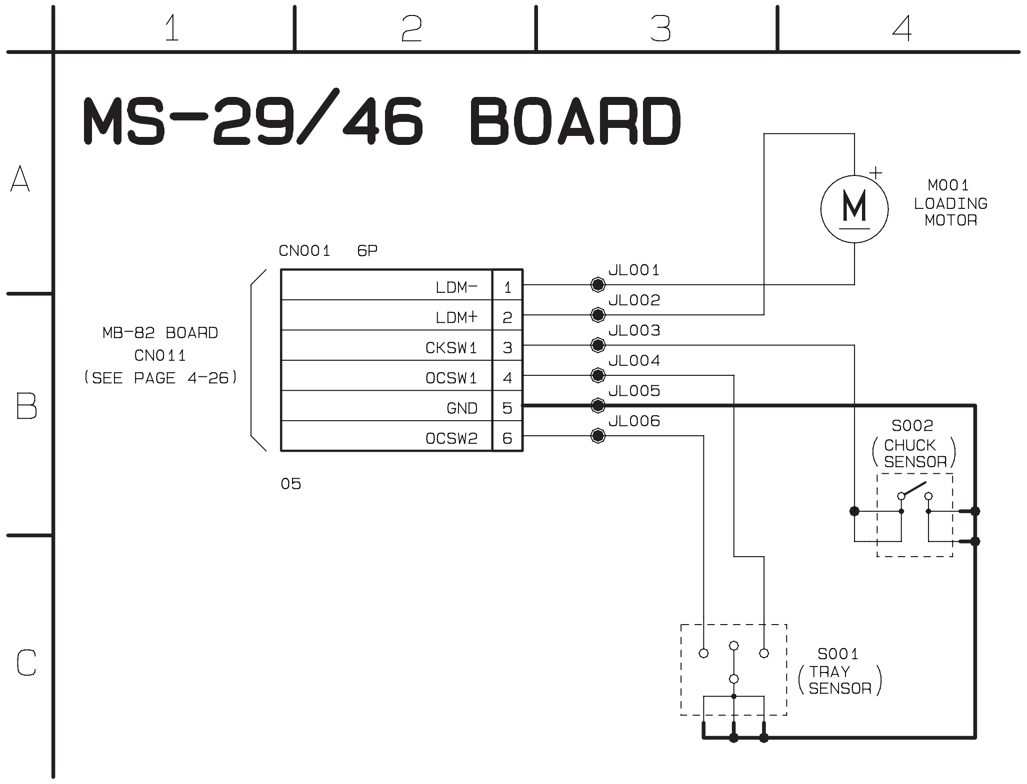
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

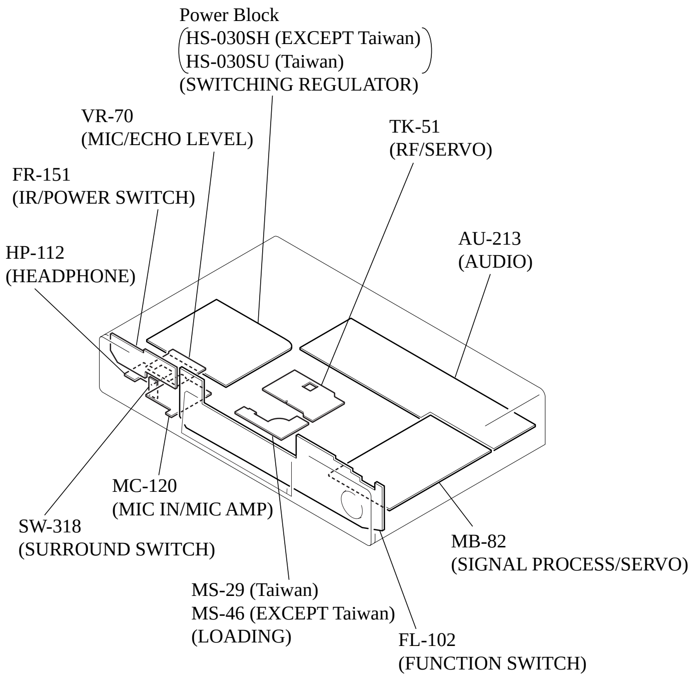
MS-29/46 (LOADING) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
– Ref. No.: MS-29/46 board; 3,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.



MS-29:1-672-678-
MS-46:1-675-146-





MB-82 (SIGNAL PROCESS) PRINTED WIRING BOARD

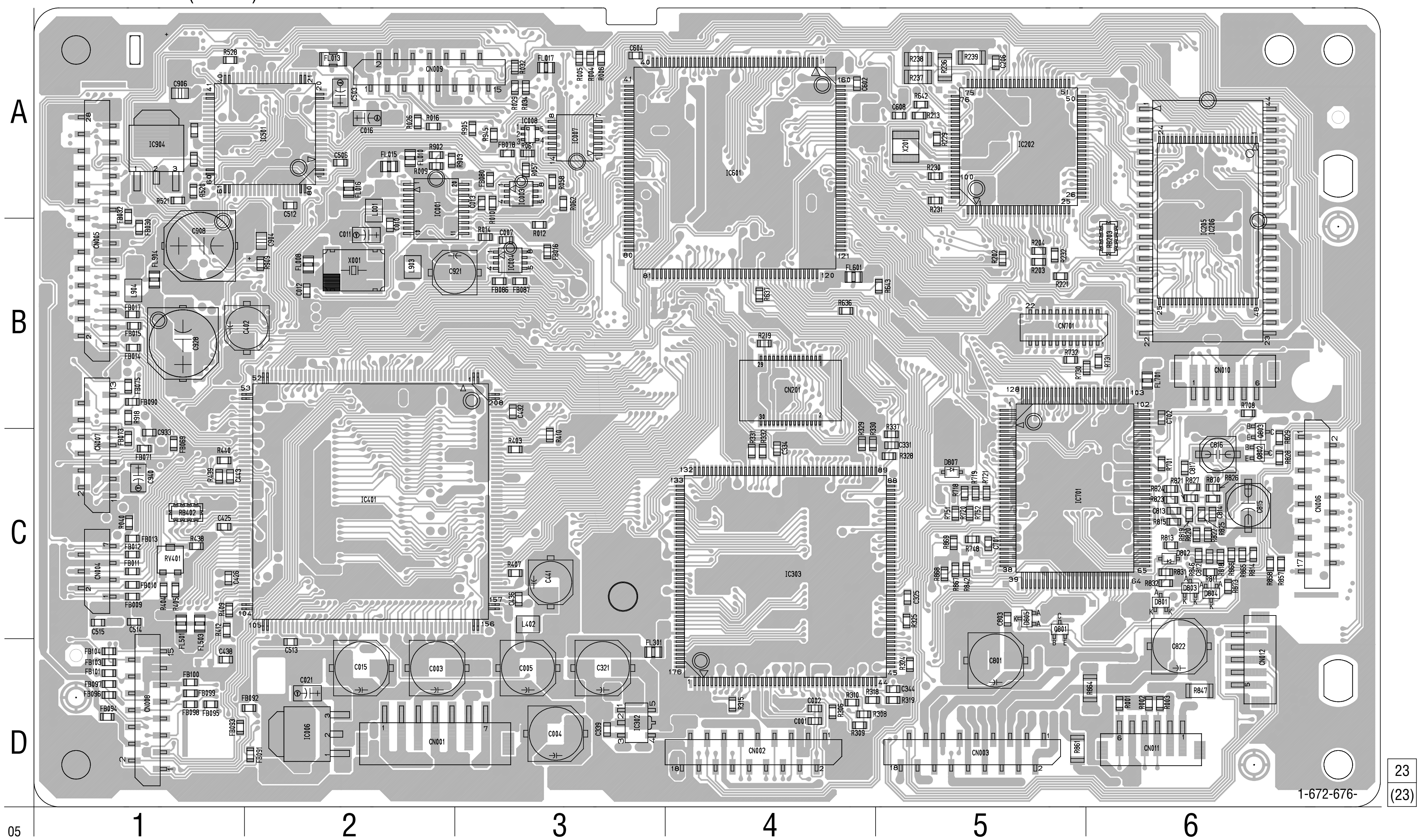
– Ref. No.: MB-82 board; 1,000 series –

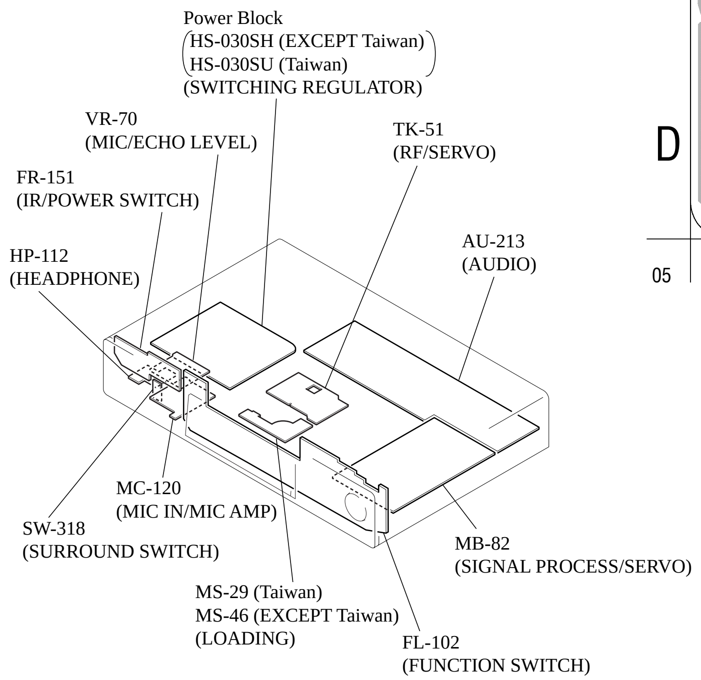
There are few cases that the part isn't mounted in this model is printed on this diagram.

MB-82 BOARD (SIDE A)

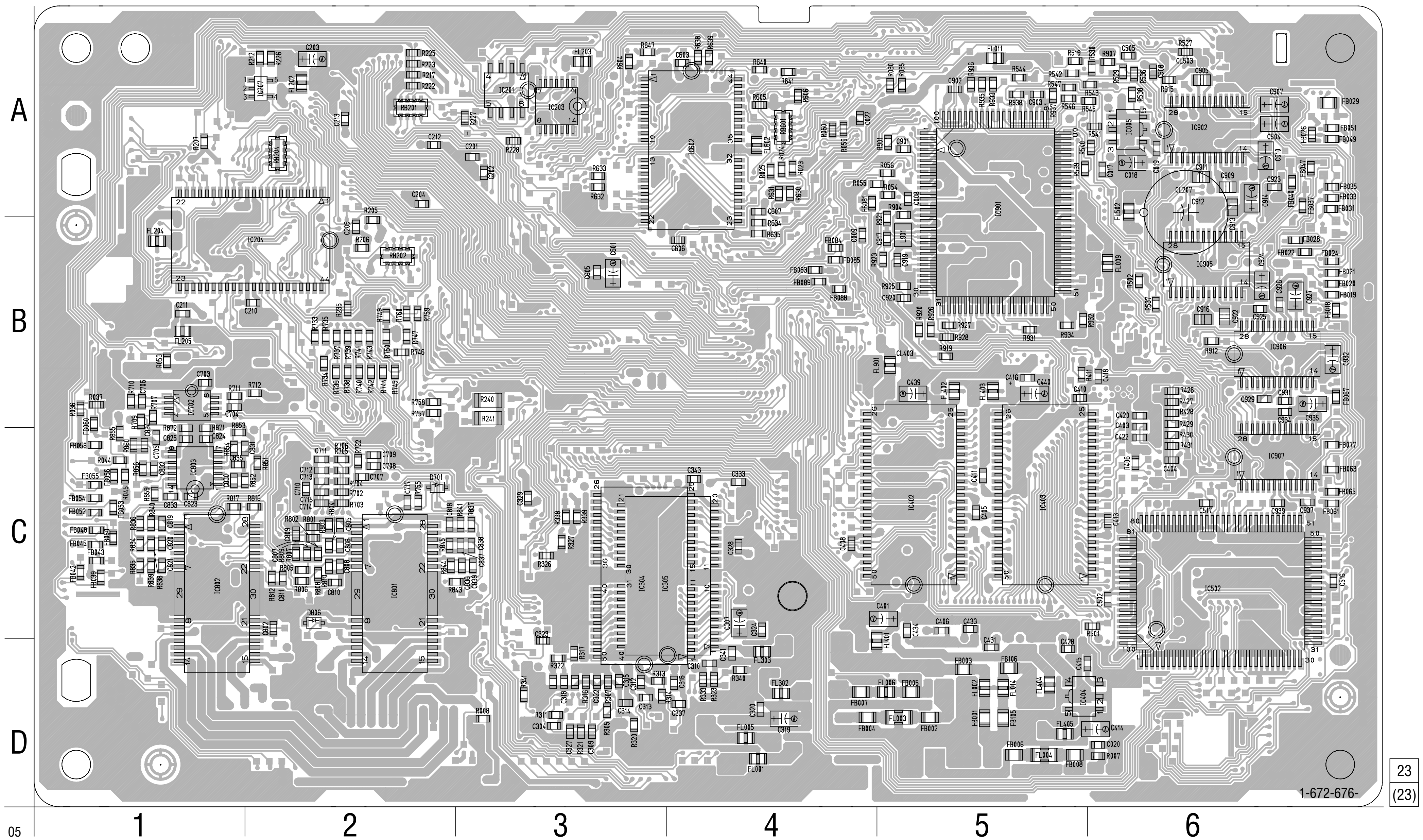
CN001	D-2
CN002	D-4
CN003	D-5
CN004	C-1
CN005	B-1
CN006	C-7
CN007	C-1
CN008	D-1
CN010	B-6
CN011	D-6
CN012	D-6
D801	C-6
D802	C-6
D803	C-6
D804	C-6
D805	C-5
D807	C-5
IC001	A-2
IC003	A-3
IC004	B-3
IC202	A-5
IC205	A-6
IC302	D-3
IC303	C-4
IC401	C-2
IC501	A-2
IC601	A-4
IC701	C-5
IC904	A-1
Q801	C-5
Q802	C-6
Q803	C-6

MB-82 BOARD(SIDE A)





MB-82 BOARD(SIDE B)



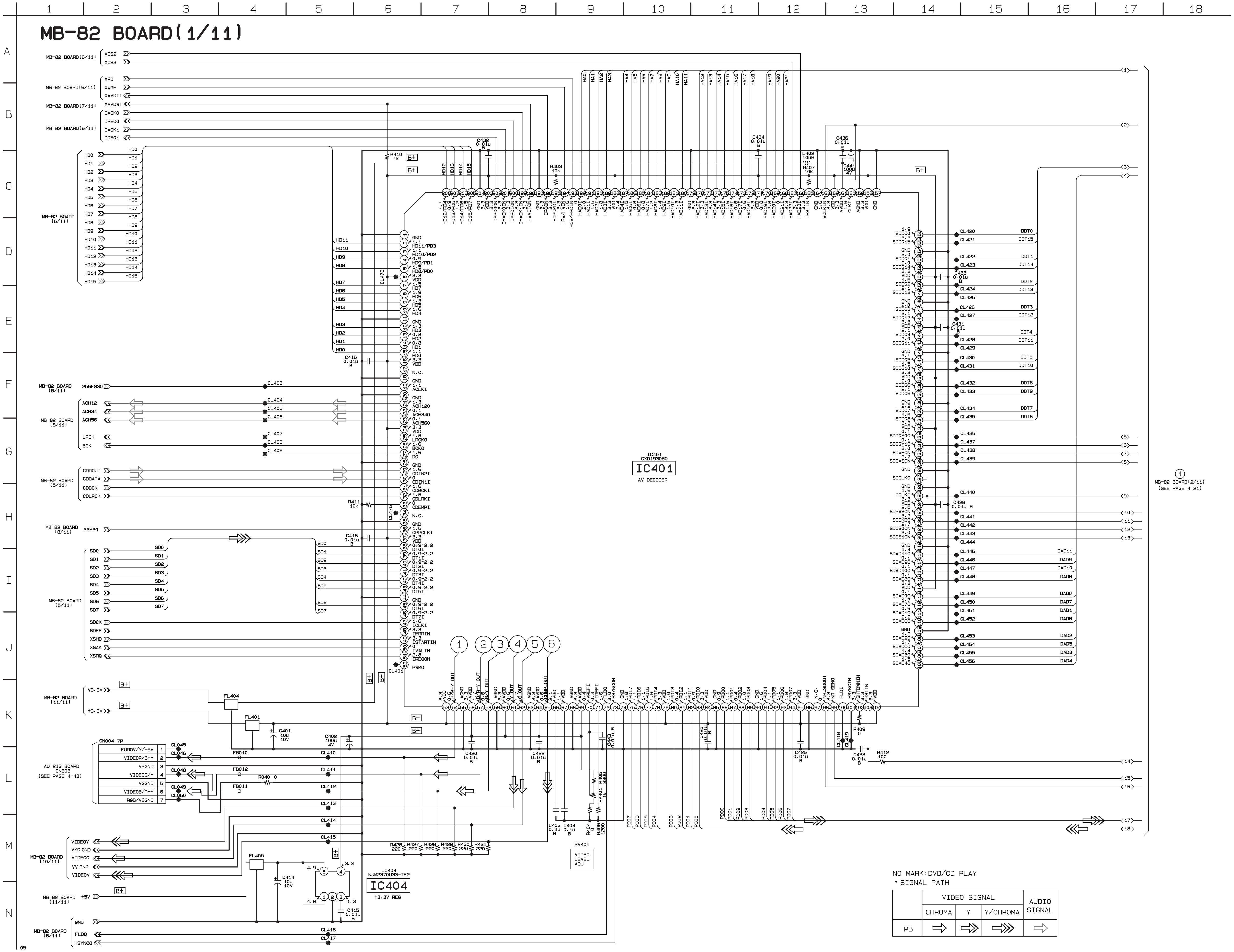
MB-82 BOARD (SIDE B)

D701	C-2
D806	C-2
IC005	A-6
IC201	A-3
IC203	A-3
IC204	B-2
IC207	A-2
IC304	C-3
IC402	C-5
IC403	C-5
IC404	D-6
IC502	C-6
IC602	A-4
IC702	B-1
IC801	C-2
IC802	C-1
IC803	C-1
IC901	A-5
IC902	A-6
IC905	B-6
IC906	B-6
IC907	C-6

SIGNAL PROCESS
MB-82

MB-82 (AV DECODER) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

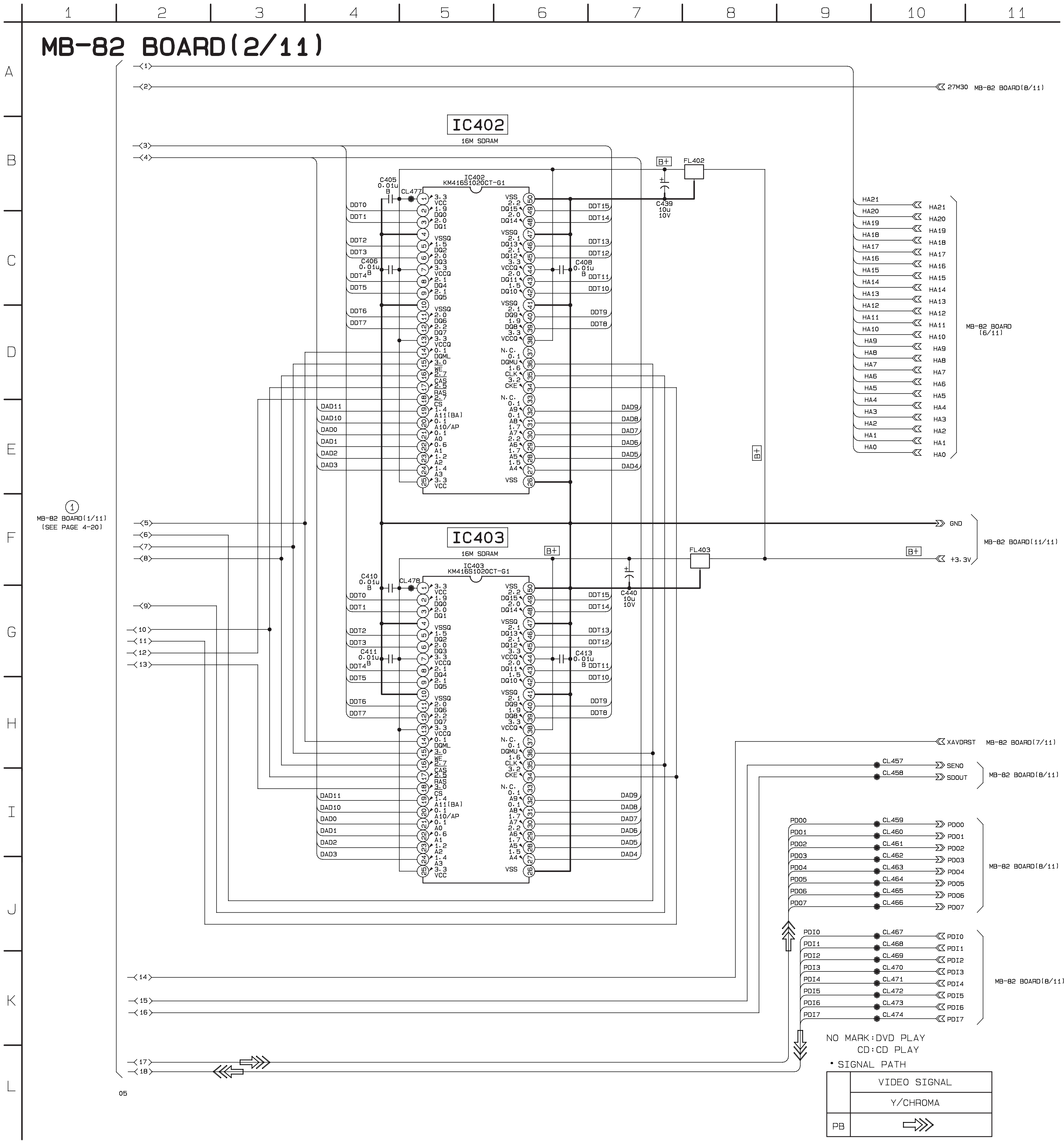
– Ref. No.: MB-82 board; 1,000 series –



AV DECODER
MB-82 (1/11)

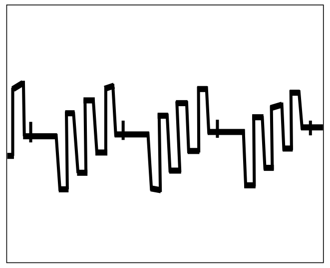
MB-82 (SDRAM) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-82 board; 1,000 series –



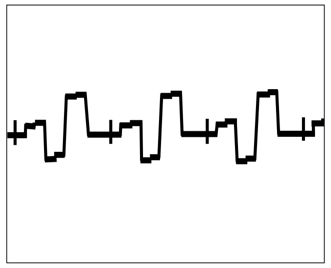
• Waveforms

❶ IC401 ㊹



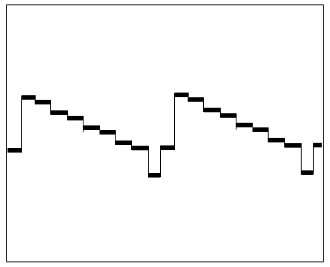
720 mVp-p (H)

❷ IC401 ㊼



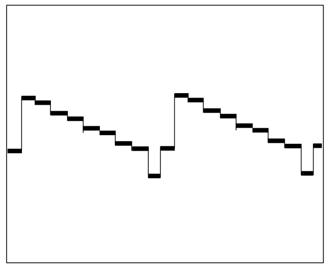
728 mVp-p (H)

❸ IC401 ㊽



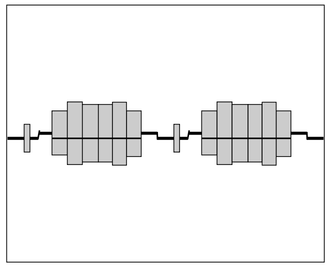
1.0 Vp-p (H)

❹ IC401 ㊿



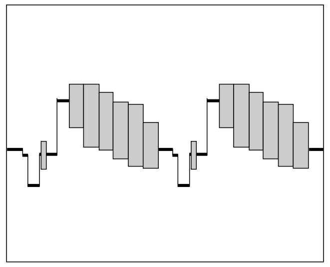
1.1 Vp-p (H)

❺ IC401 62



816 mVp-p (H)

❻ IC401 65



1.2 Vp-p (H)

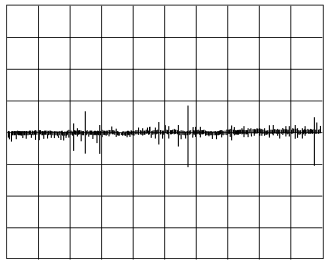
SDRAM
MB-82 (2/11)

MB-82 (SERVO DSP) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-82 board; 1,000 series –

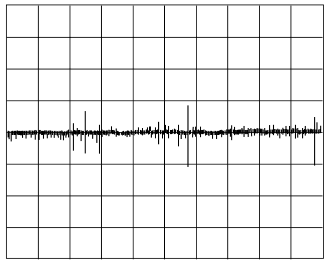
• Waveforms

❶ IC701 ⑥⑨ (DVD play)
500 mV/DIV 50 ms/DIV



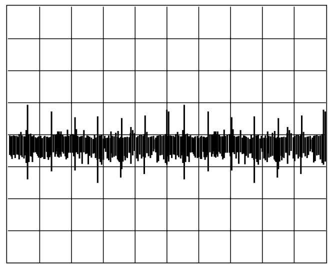
1.4 Vp-p

❷ IC701 ⑥⑨ (CD play)
500 mV/DIV 200 mV/DIV



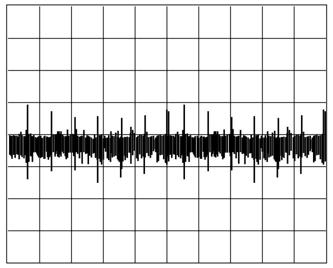
1.7 Vp-p

❸ IC701 ⑥⑧ (DVD play)
100 mV/DIV 5 ms/DIV

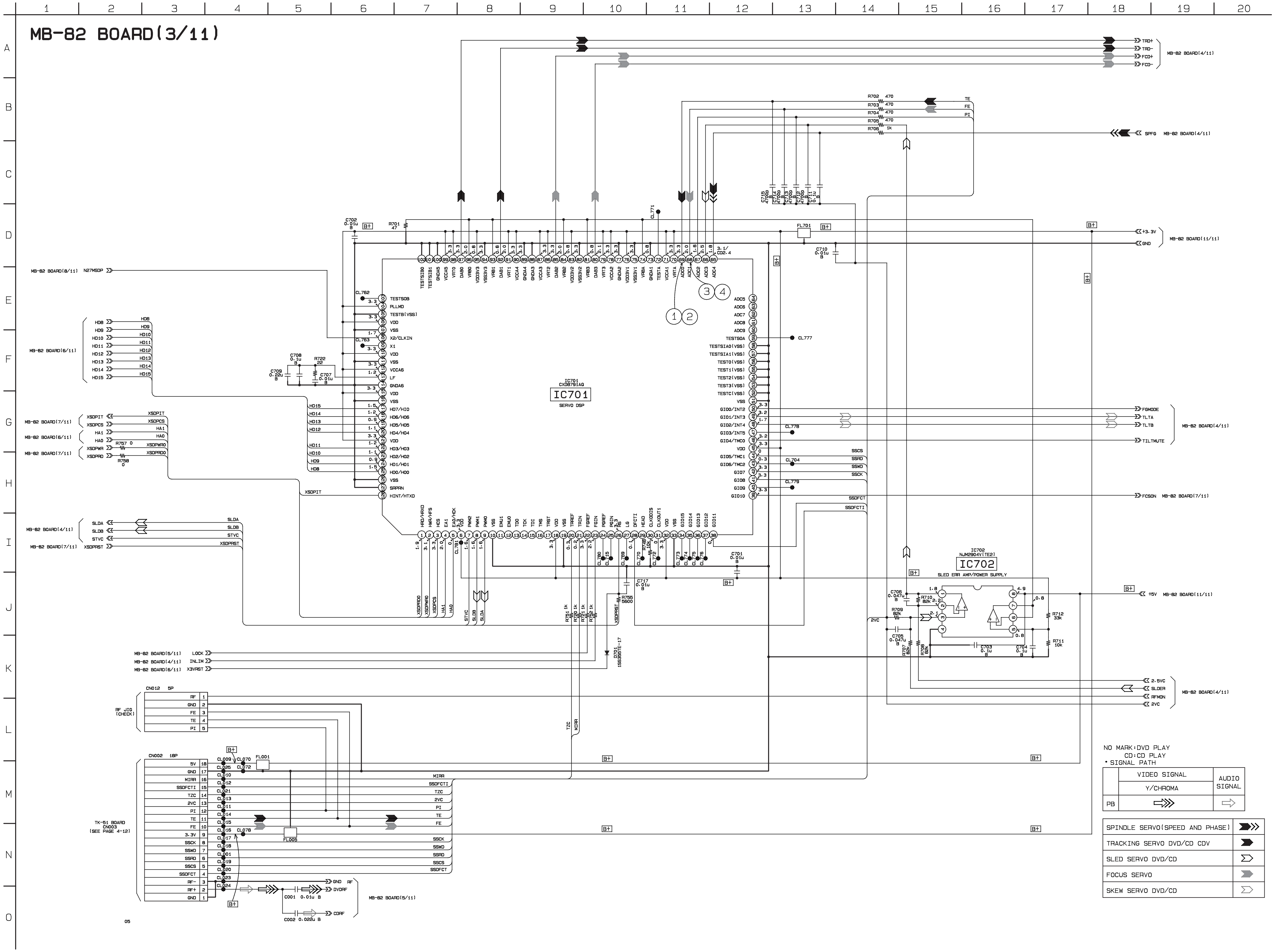


180 mVp-p

❹ IC701 ⑥⑧ (CD play)
500 mV/DIV 50 ms/DIV

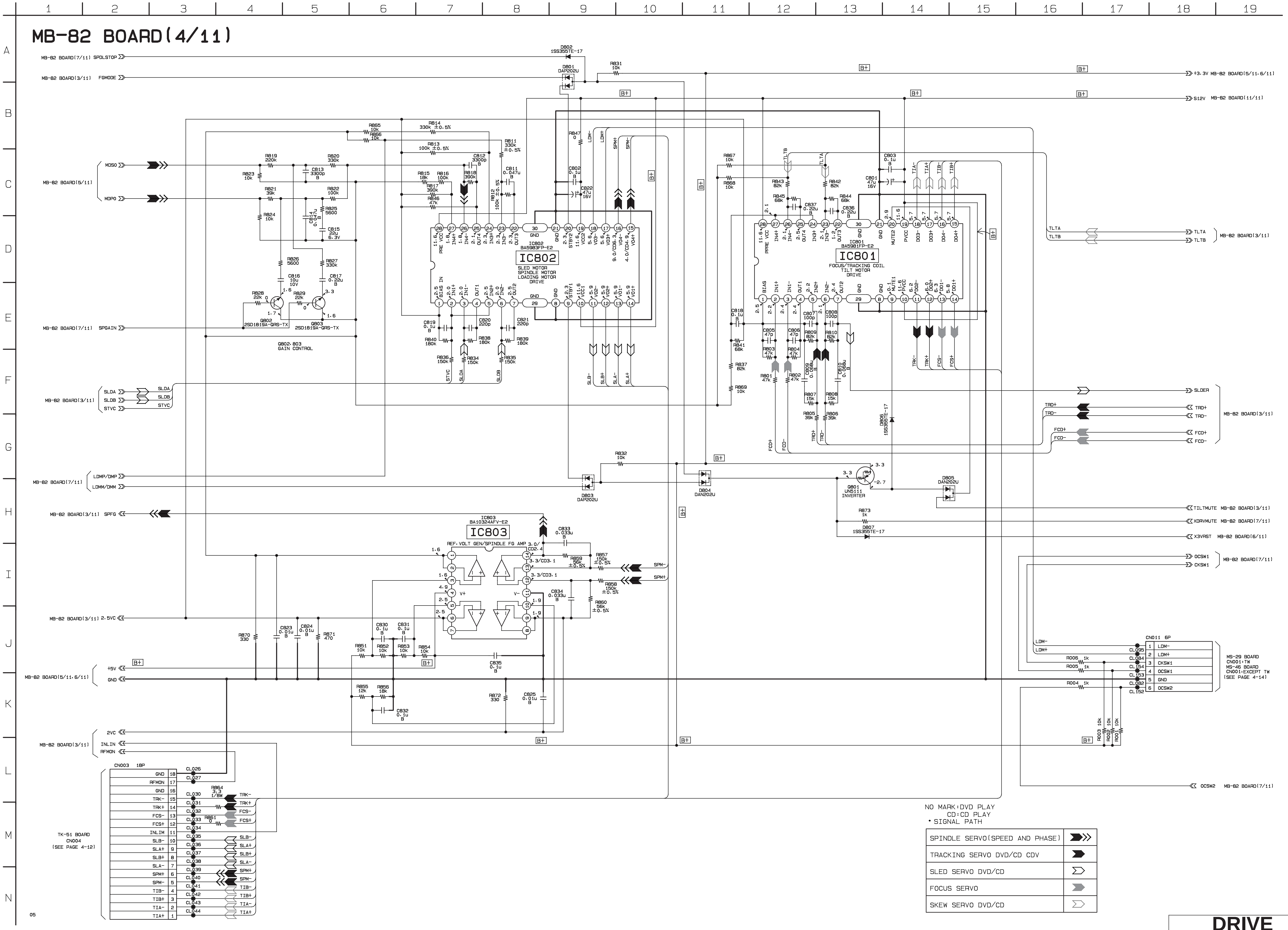


860 mVp-p



MB-82 (DRIVE) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

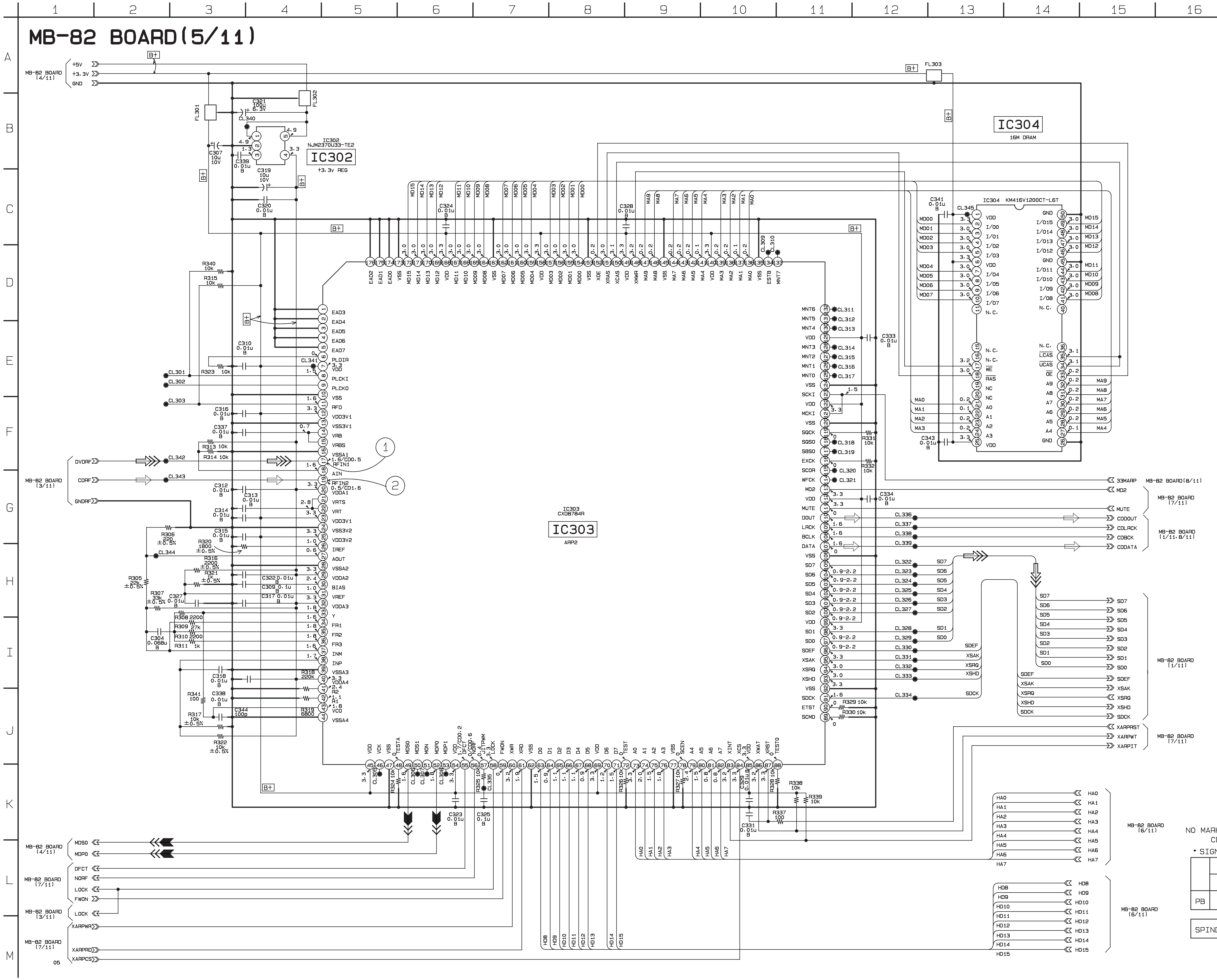
– Ref. No.: MB-82 board; 1,000 series –



DRIVE
MB-82 (4/11)

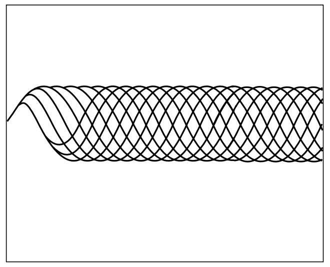
MB-82 (ARP) SCHEMATIC DIAGRAM • **See page 4-15 for printed wiring board.**

– Ref. No.: MB-82 board; 1,000 series –



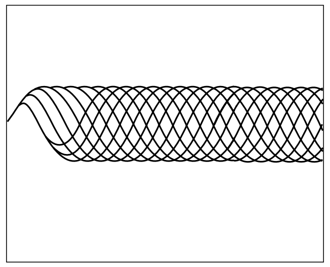
• **Waveforms**

❶ IC303 ⑰ (DVD play)
500 mV/DIV 100 ns/DIV



1.6 Vp-p

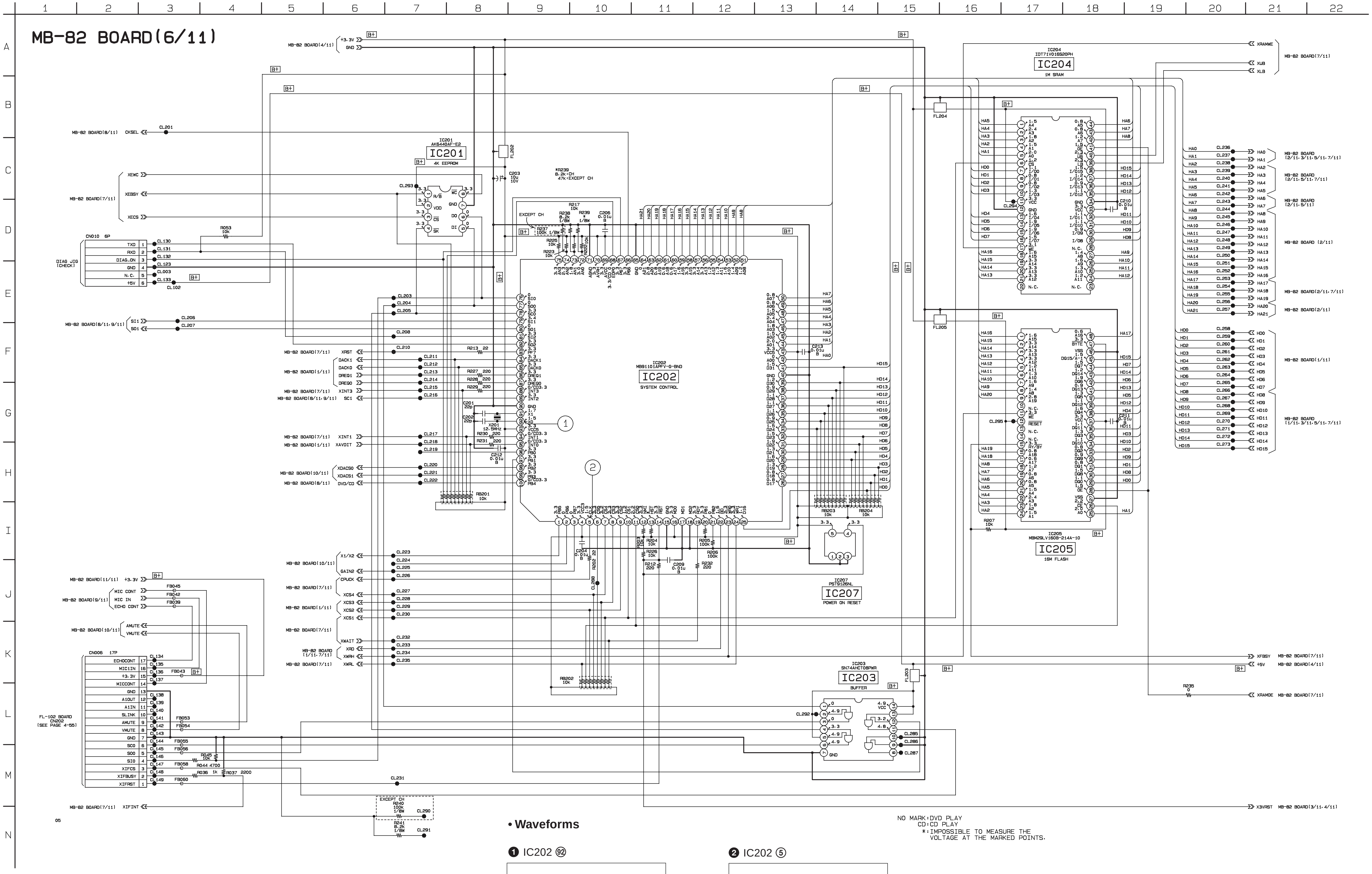
❷ IC303 ⑲ (CD play)
500 mV/DIV 200 ns/DIV



1.6 Vp-p

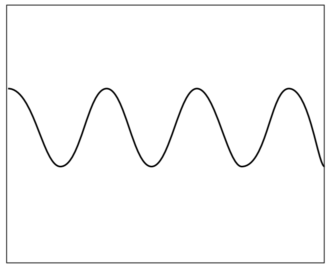
MB-82 (SYSTEM CONTROL) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-82 board; 1,000 series –



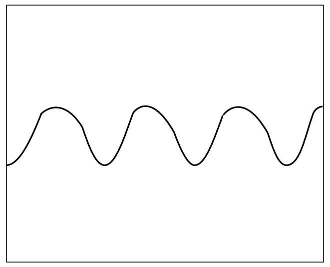
• Waveforms

❶ IC202 ⑫



2.4 Vp-p (12.5 MHz)

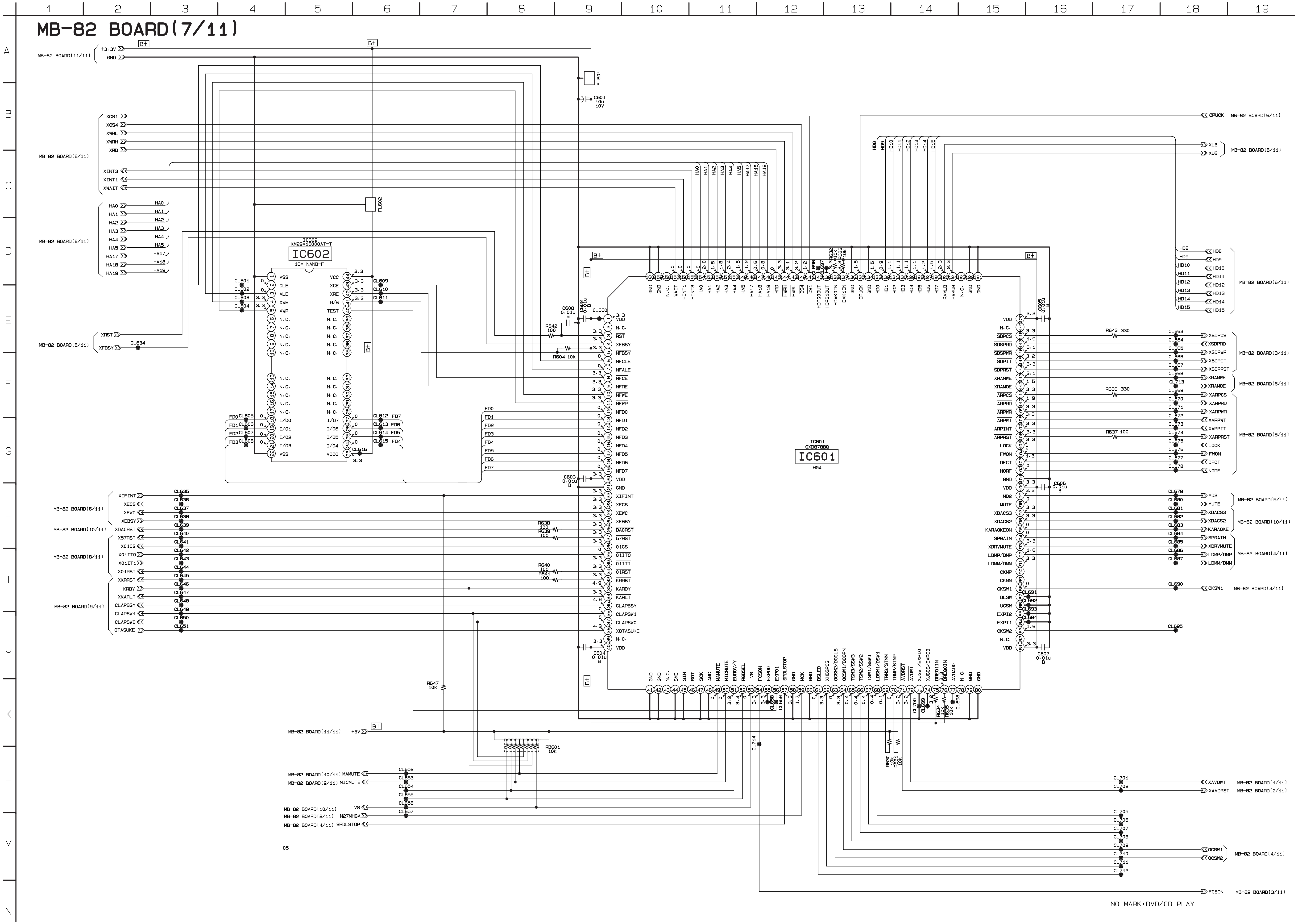
❷ IC202 ⑤



4 Vp-p (25.3 MHz)

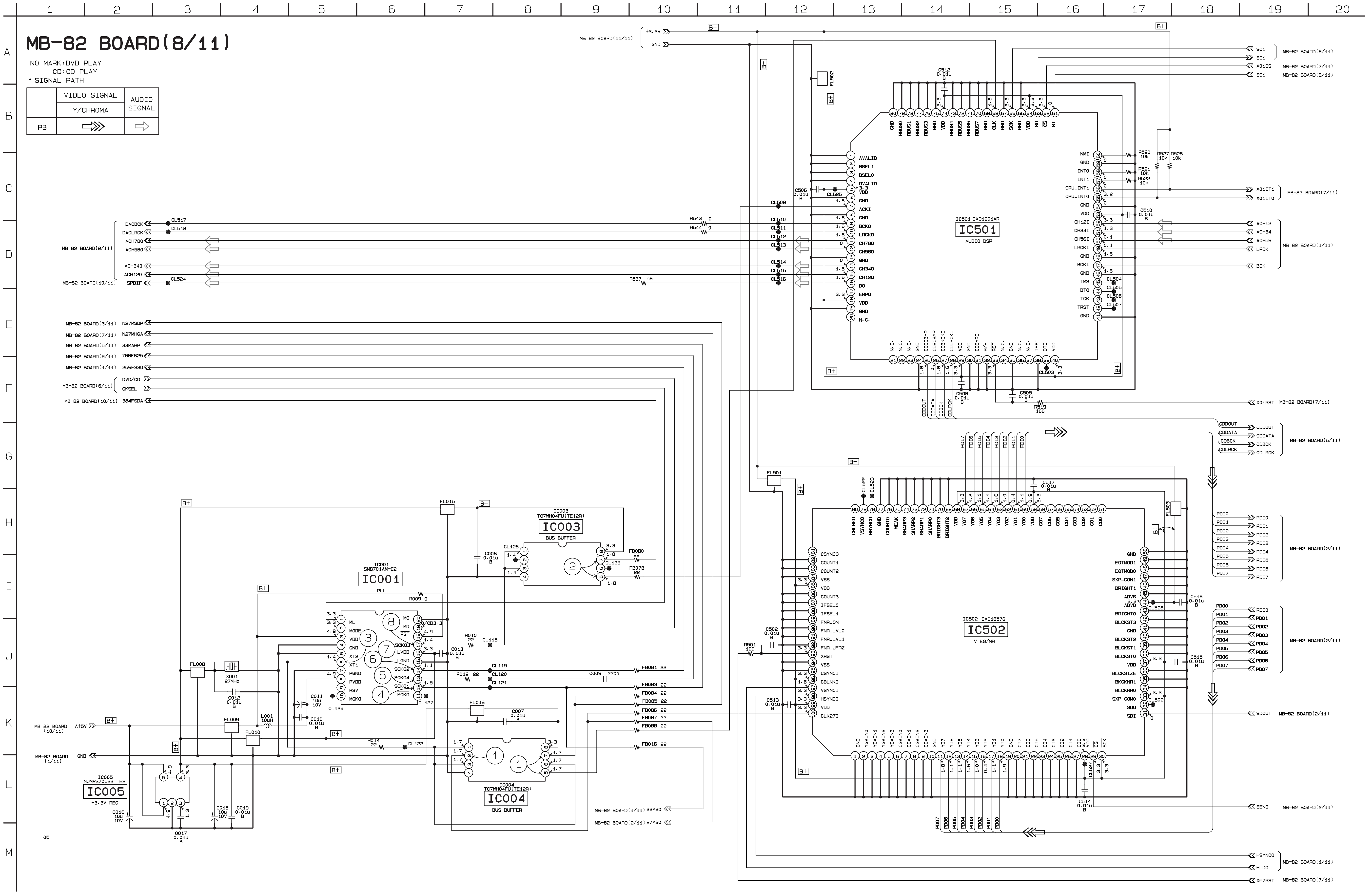
MB-82 (HGA) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-82 board; 1,000 series –



HGA
MB-82 (7/11)

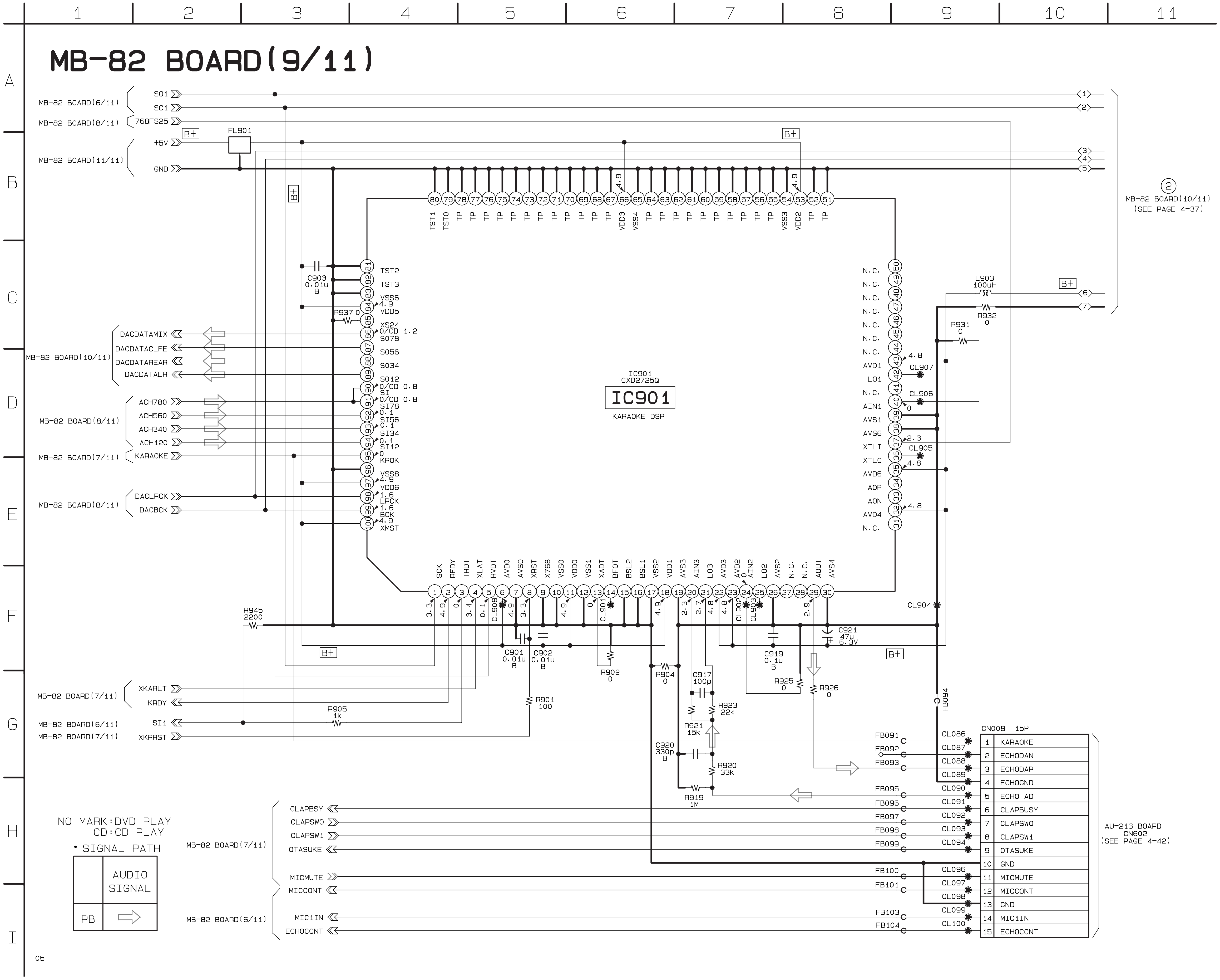
MB-82 (CLOCK GENERATOR/AUDIO DSP/V EQ/NR) SCHEMATIC DIAGRAM • **See page 4-15 for printed wiring board and page 4-39 for waveforms.**
– Ref. No.: MB-82 board; 1,000 series –



CLOCK GENERATOR/AUDIO DSP/V EQ/NR
MB-82 (8/11)

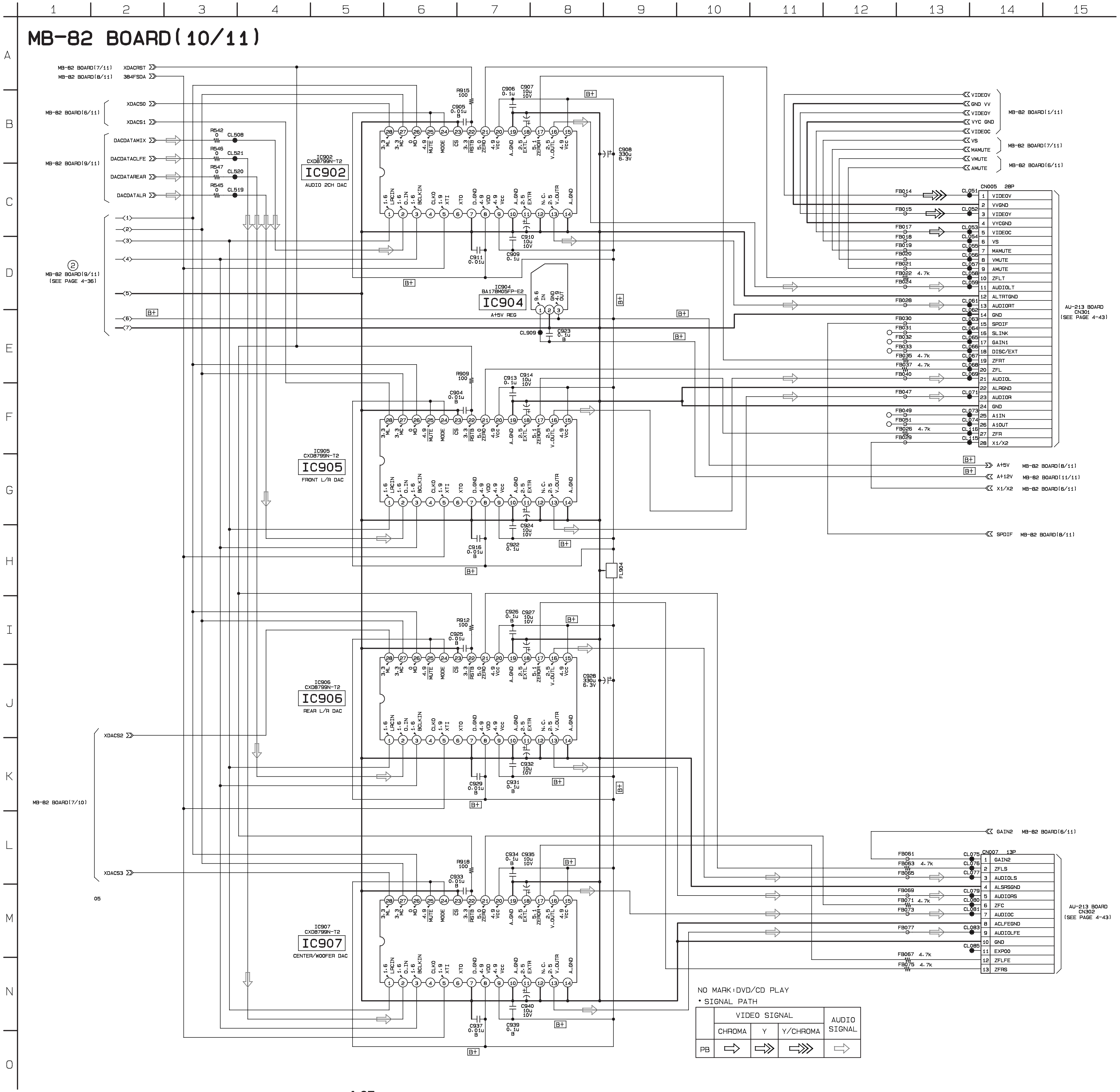
MB-82 (KARAOKE DSP) SCHEMATIC DIAGRAM **• See page 4-15 for printed wiring board.**

– Ref. No.: MB-82 board; 1,000 series –



MB-82 (DAC) SCHEMATIC DIAGRAM **• See page 4-15 for printed wiring board.**

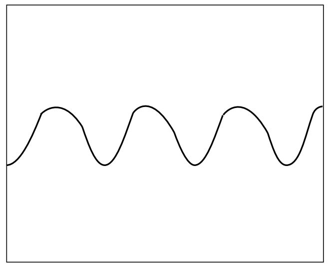
– Ref. No.: MB-82 board; 1,000 series –



MB-82 (BIAS) SCHEMATIC DIAGRAM **• See page 4-15 for printed wiring board.**
– Ref. No.: MB-82 board; 1,000 series –

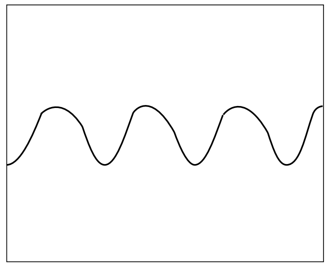
• Waveforms

❶ IC004 ②, ⑤, ⑦



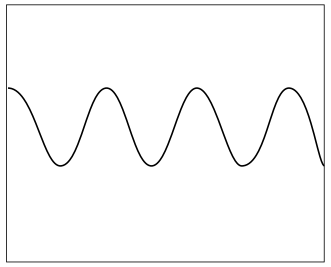
4.2 Vp-p (26.9 MHz)

❷ IC003 ⑤, ⑦



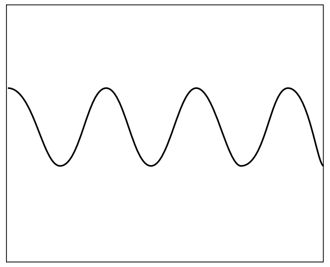
DVD : 6.2 Vp-p (37.0 MHz)
CD : 5 Vp-p (33.6 MHz)

❸ IC001 ⑥



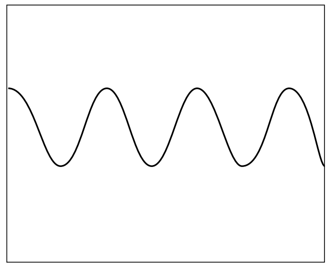
4.2 Vp-p (27.0 MHz)

❹ IC001 ⑫



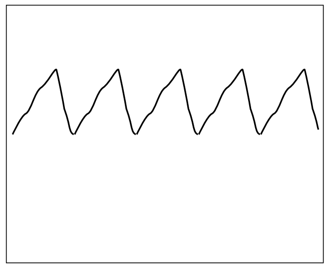
4.6 Vp-p (33.8 MHz)

❺ IC001 ⑬



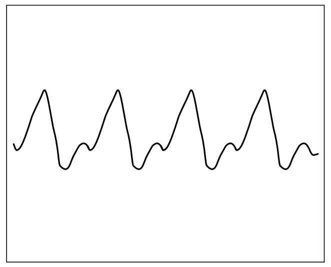
DVD : 5.6 Vp-p (36.8 MHz)
CD : 5.2 Vp-p (33.9 MHz)

❻ IC001 ⑭ (DVD play)



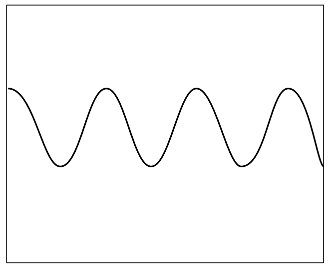
4.2 Vp-p (25.3 MHz)

❼ IC001 ⑭ (CD play)

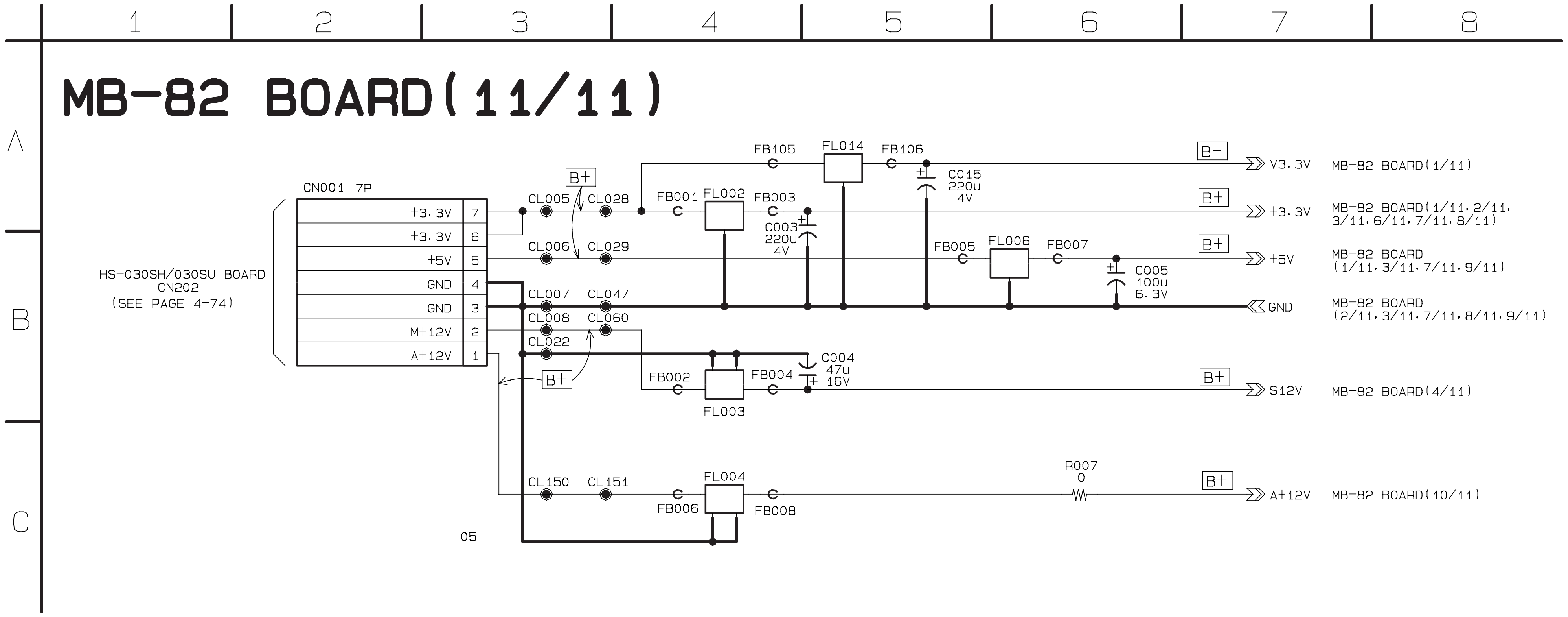


4.7 Vp-p (22.5 MHz)

❽ IC001 ⑰

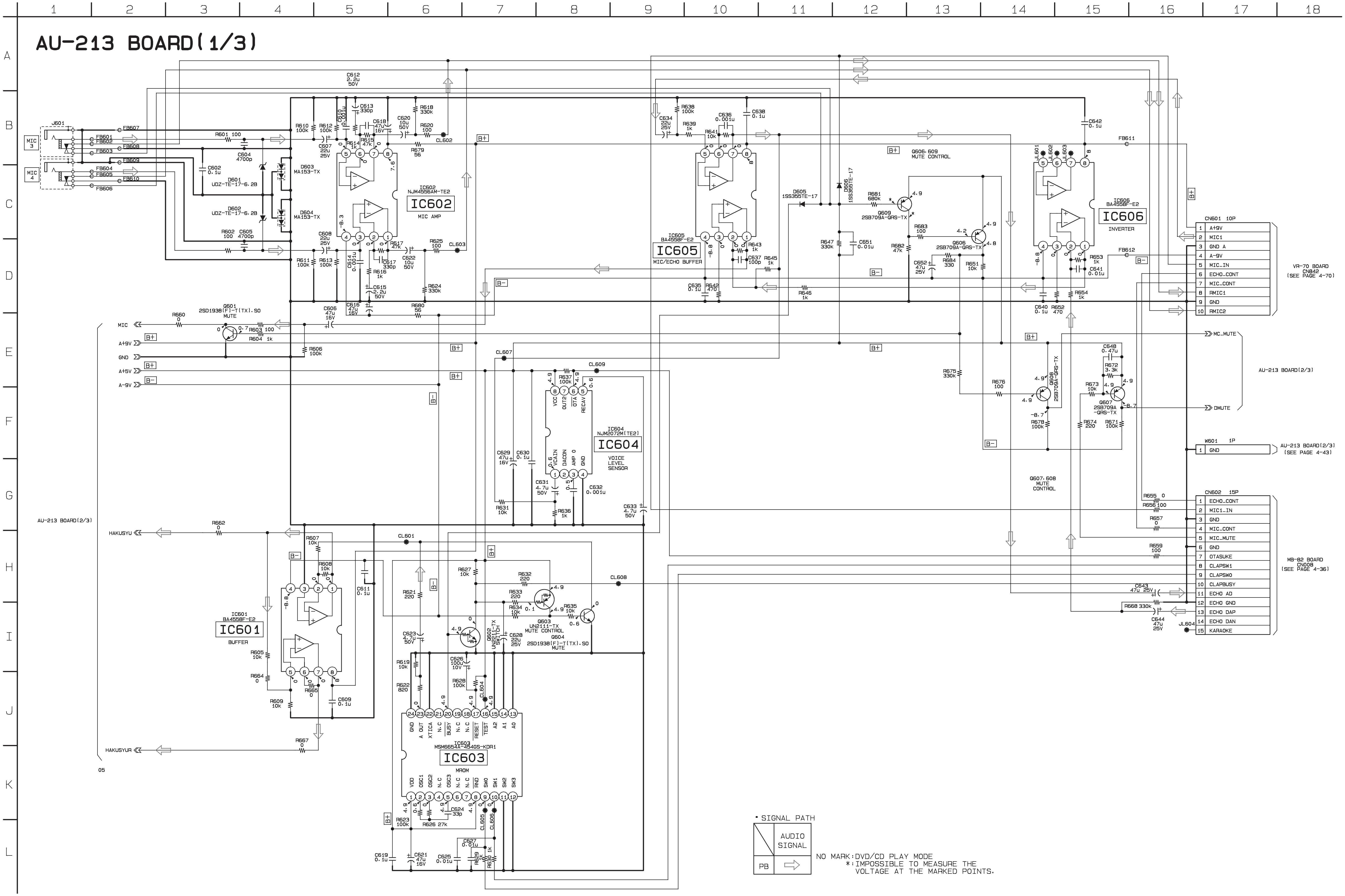


DVD : 5.8 Vp-p (36.5 MHz)
CD : 5.1 Vp-p (33.8 MHz)



AU-213 (MIC AMP/AUDIO 1) SCHEMATIC DIAGRAM • **See page 4-47 for printed wiring board.**

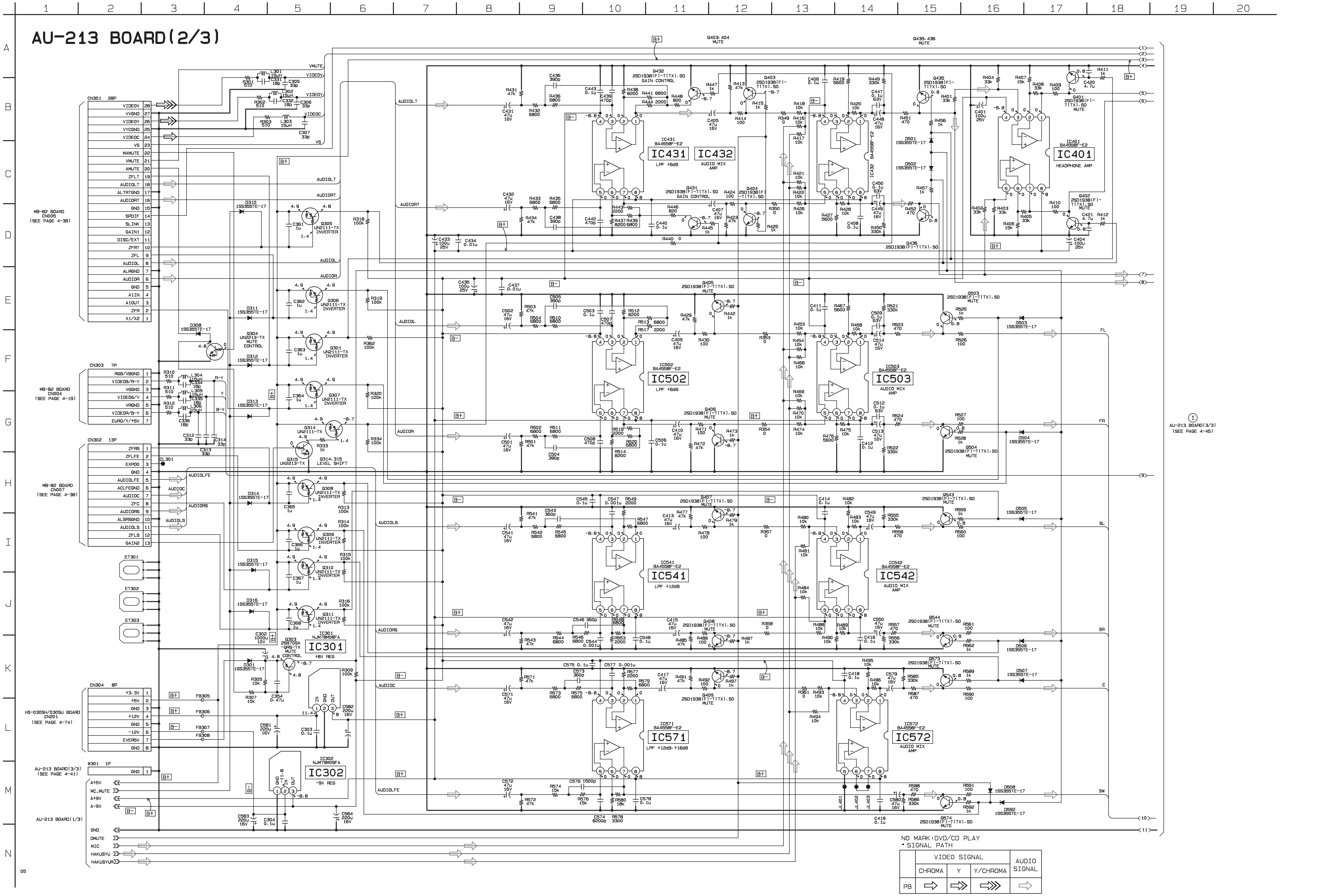
– Ref. No.: AU-213 board; 2,000 series –



MIC AMP/AUDIO 1
AU-213 (1/3)

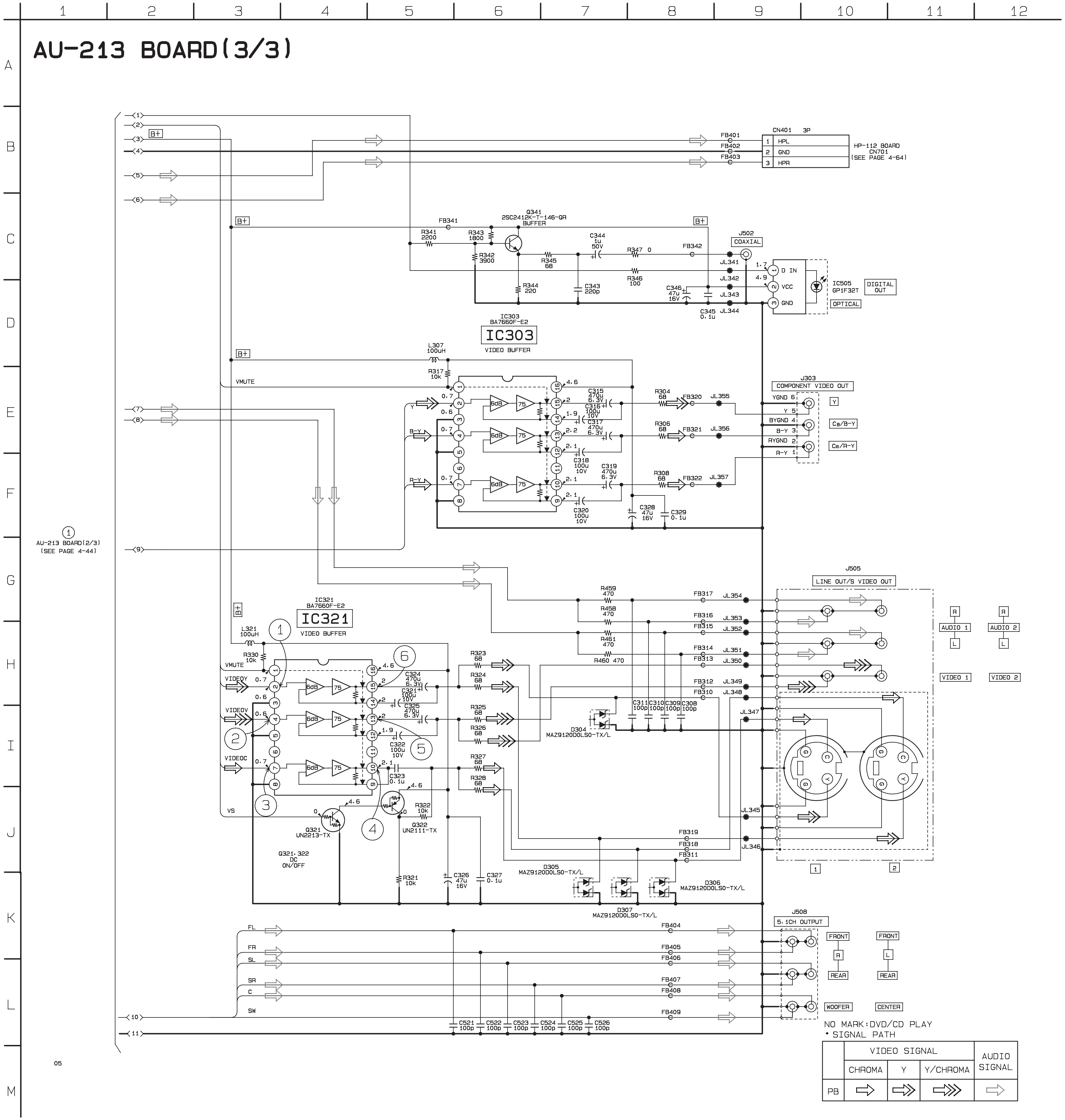
AU-213 (AUDIO 2) SCHEMATIC DIAGRAM • See page 4-47 for printed wiring board.

– Ref. No.: AU-213 board; 2,000 series –



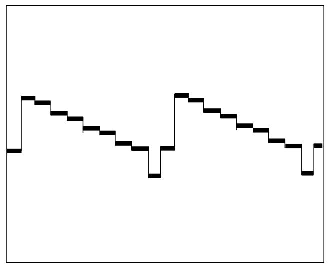
AU-213 (VIDEO BUFFER) SCHEMATIC DIAGRAM • See page 4-47 for printed wiring board.

– Ref. No.: AU-213 board; 2,000 series –



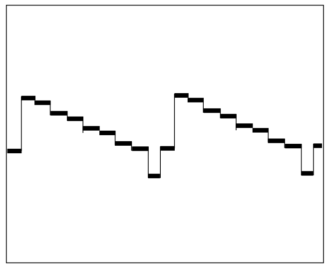
• Waveforms

❶ IC321 ②



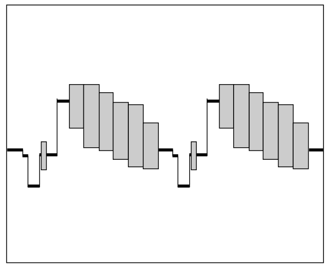
1.1 Vp-p (H)

❻ IC321 ⑮



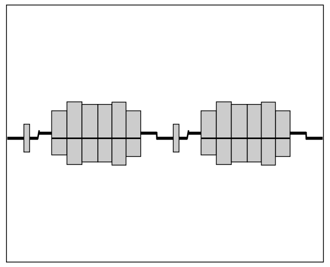
2.0 Vp-p (H)

❷ IC321 ④



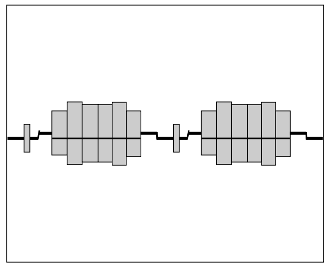
1.2 Vp-p (H)

❸ IC321 ⑦



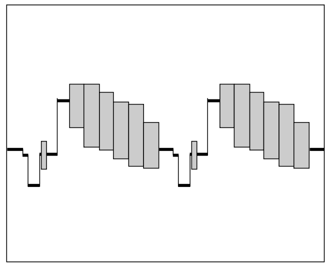
860 mVp-p (H)

❹ IC321 ⑩



1.8 Vp-p (H)

❺ IC321 ⑬



2.4 Vp-p (H)

VIDEO BUFFER
AU-213 (3/3)

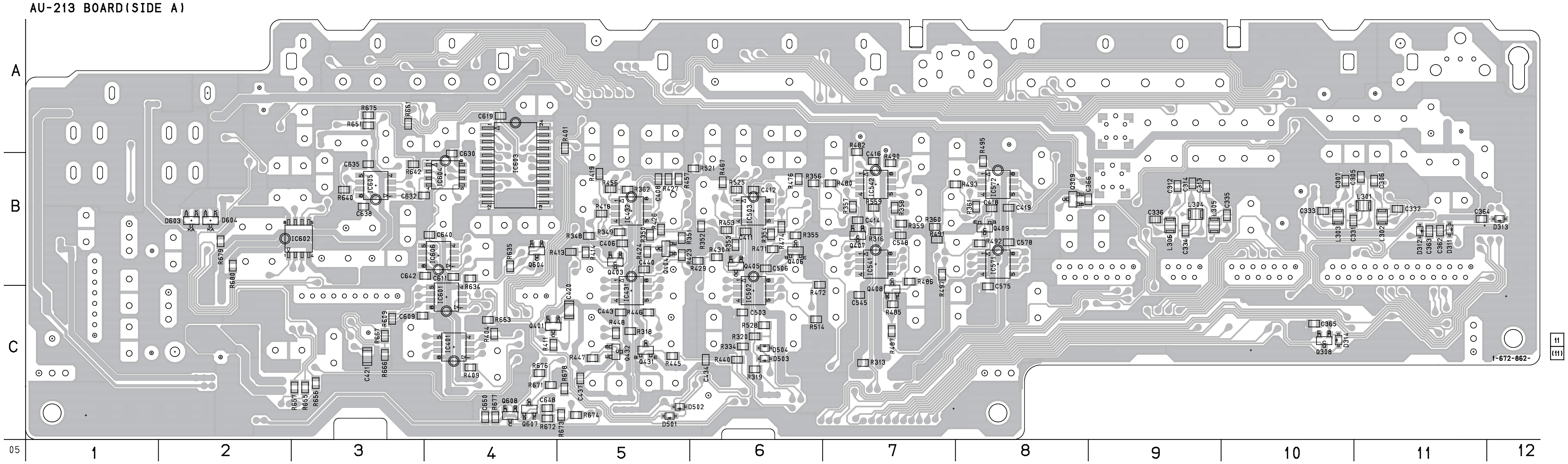
AU-213 (MIC AMP/AUDIO/VIDEO BUFFER) PRINTED WIRING BOARD

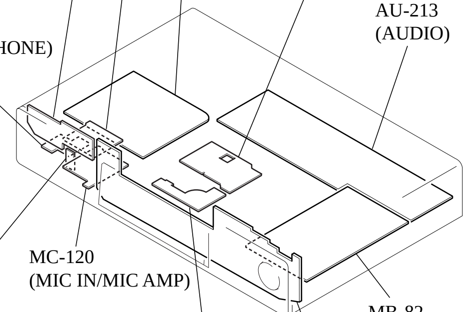
– Ref. No.: AU-213 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

AU-213 BOARD (SIDE A)

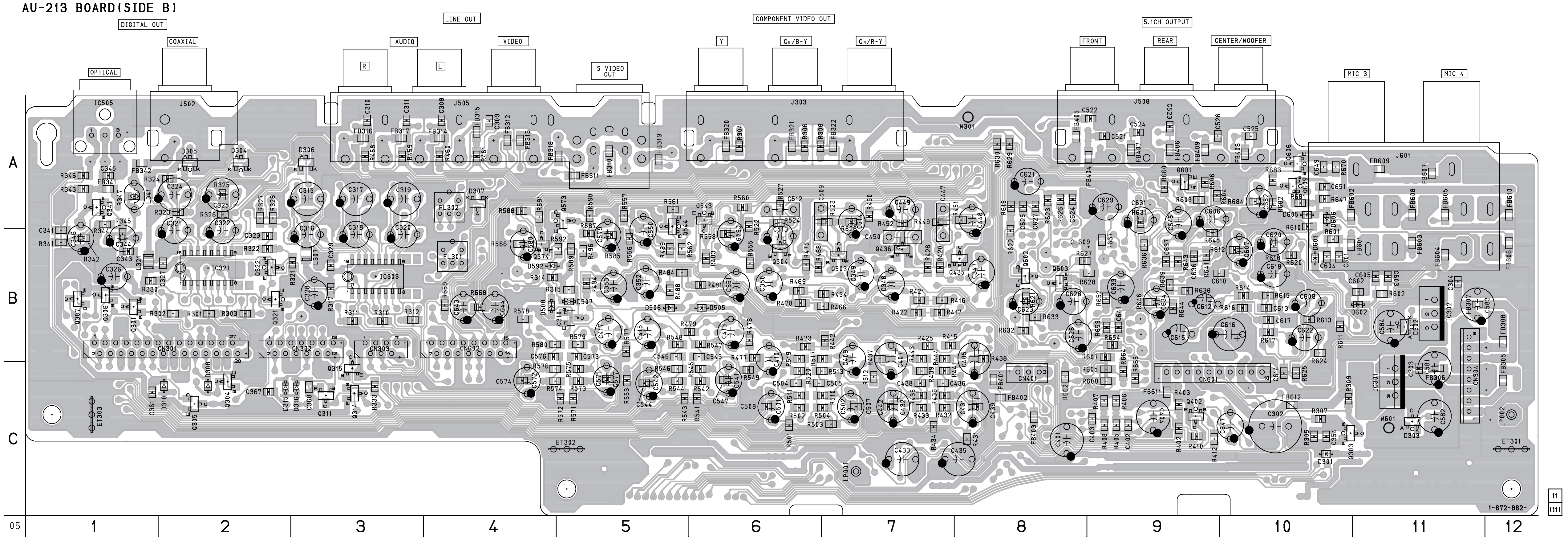
D311	B-11
D312	B-11
D313	B-12
D314	C-10
D501	C-5
D502	C-5
D503	C-6
D504	C-6
D603	B-2
D604	B-2
IC401	C-4
IC431	C-5
IC432	B-5
IC502	C-6
IC503	B-6
IC541	B-7
IC542	B-7
IC571	B-8
IC572	B-8
IC601	C-4
IC602	B-3
IC603	B-4
IC604	B-4
IC605	B-3
IC606	B-4
Q308	C-10
Q309	B-8
Q401	C-4
Q403	B-5
Q404	B-5
Q405	B-6
Q406	B-6
Q407	B-7
Q408	C-7
Q409	B-8
Q431	C-5
Q432	C-5
Q604	B-4
Q607	C-4
Q608	C-4





MIC AMP/AUDIO/VIDEO BUFFER
AU-213

AU-213 BOARD(SIDE B)



AU-213 BOARD (SIDE B)

CN301	B-2
CN302	B-3
CN303	B-3
CN304	C-11
CN401	C-8
CN601	C-9
CN602	B-4
D301	C-10
D304	A-2
D305	A-2
D306	A-3
D307	A-4
D308	C-2
D310	C-2
D315	C-2
D316	C-3
D505	B-6
D506	B-5
D507	B-5
D508	B-4
D592	B-4
D601	B-10
D602	B-11
D605	A-10
D606	A-10
IC301	C-11
IC302	B-11
IC303	B-3
IC321	B-2
IC505	A-1

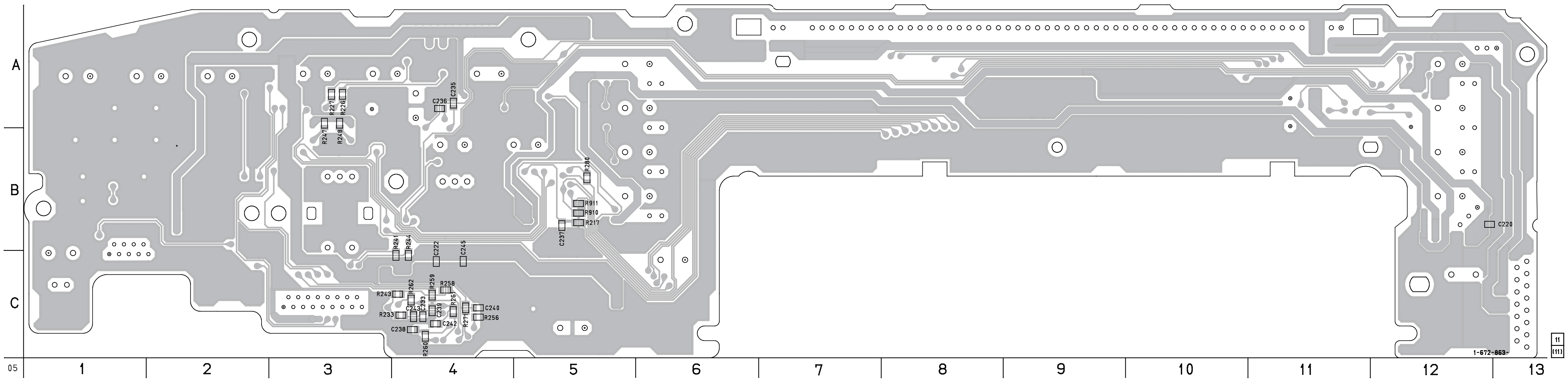
Q301	B-1
Q303	C-10
Q304	C-2
Q305	C-2
Q306	B-1
Q307	B-1
Q310	B-5
Q311	C-3
Q314	C-3
Q315	C-3
Q321	B-2
Q322	B-2
Q341	A-1
Q402	C-9
Q435	B-8
Q436	B-7
Q503	B-7
Q504	B-6
Q543	A-6
Q544	A-5
Q573	A-5
Q574	B-4
Q601	A-9
Q602	B-8
Q603	B-8
Q606	A-10
Q609	A-10

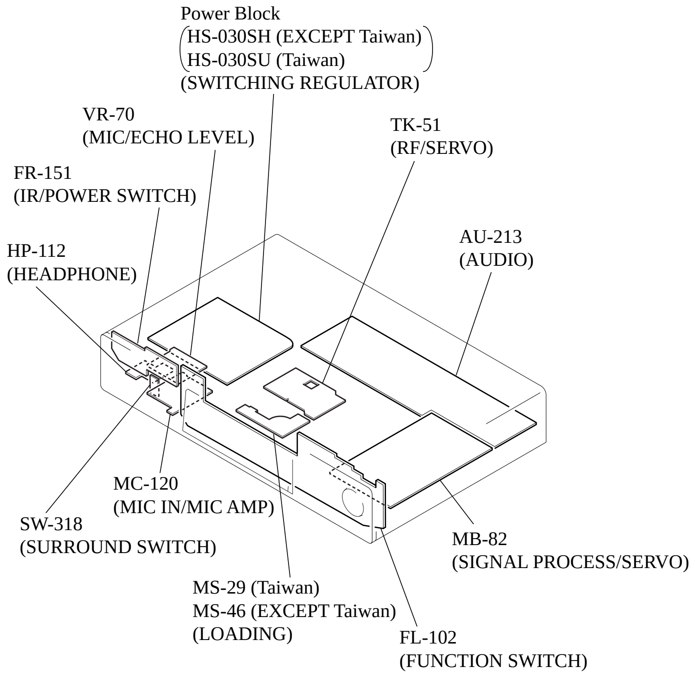
MIC AMP/AUDIO/VIDEO BUFFER
AU-213

FL-102 (FUNCTION SWITCH/IF CON) PRINTED WIRING BOARD
– Ref. No.: FL-102 board; 2,000 series –

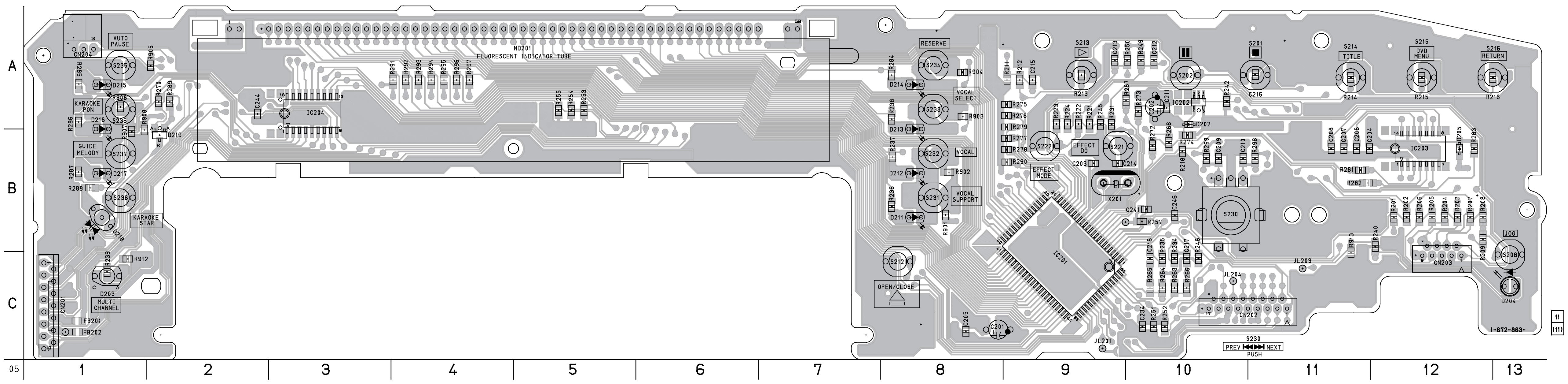
There are few cases that the part isn't mounted in this model is printed on this diagram.

FL-102 BOARD(SIDE A)





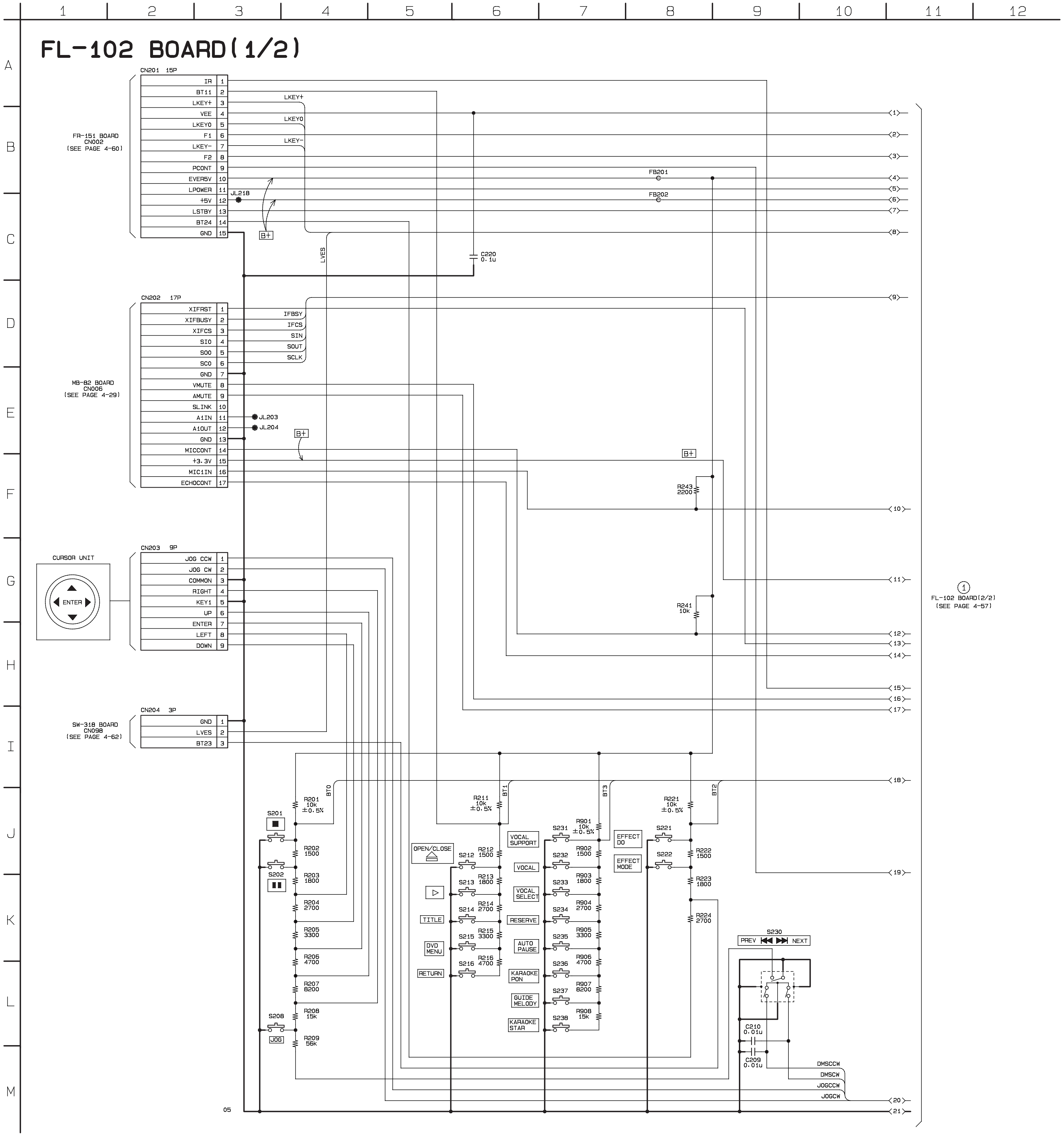
FL-102 BOARD(SIDE B)



FL-102 BOARD (SIDE B)

CN201	C-1
CN202	C-10
CN203	C-12
CN204	A-1
D202	A-10
D203	C-1
D204	C-13
D211	B-8
D212	B-8
D213	B-8
D214	A-8
D215	A-1
D216	A-1
D217	B-1
D218	B-1
D219	B-2
IC201	C-9
IC202	A-10
IC204	A-3

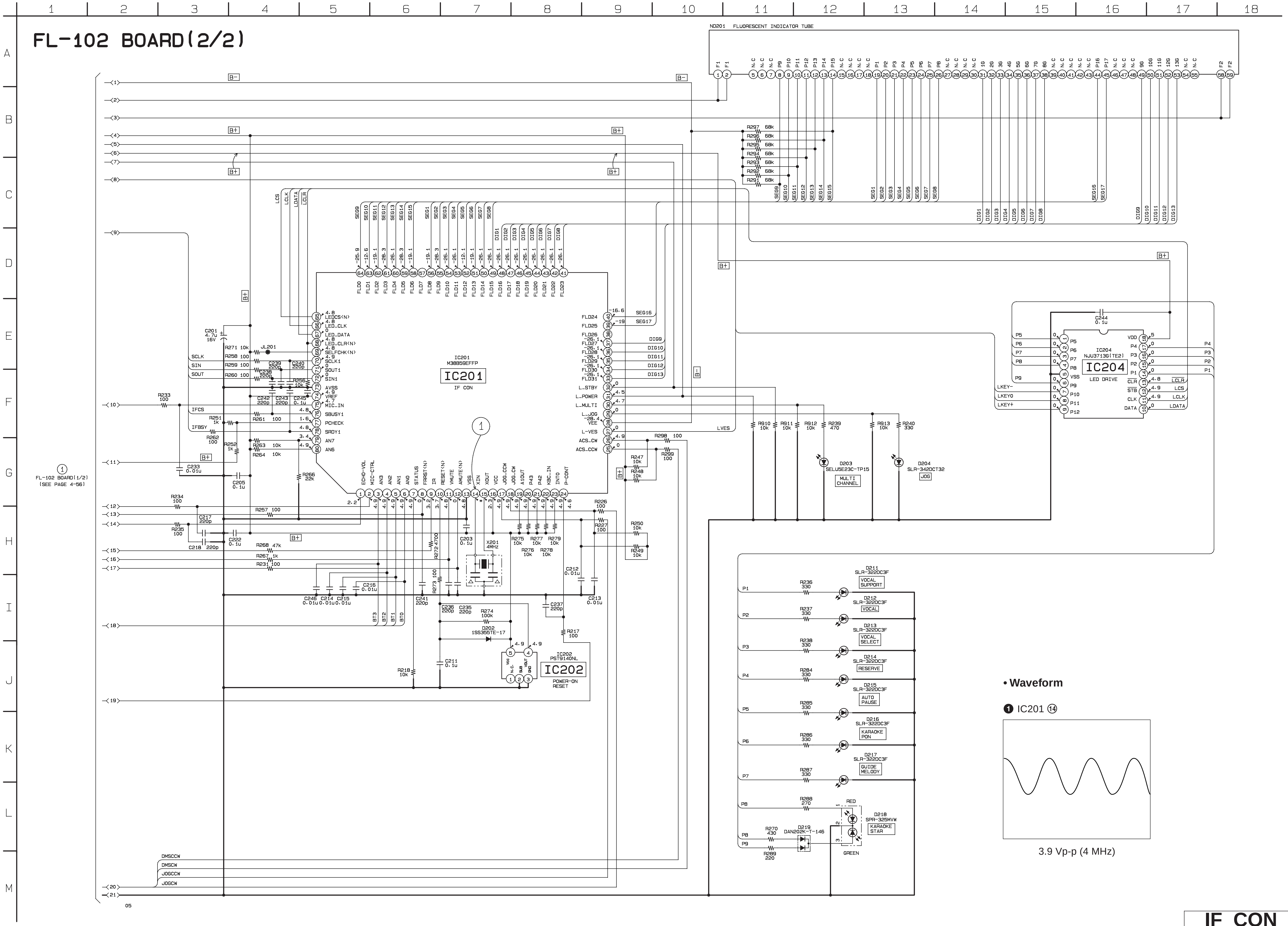
FL-102 (FUNCTION SWITCH) SCHEMATIC DIAGRAM • **See page 4-51 for printed wiring board.**
– Ref. No.: FL-102 board; 2,000 series –



FUNCTION SWITCH
FL-102 (1/2)

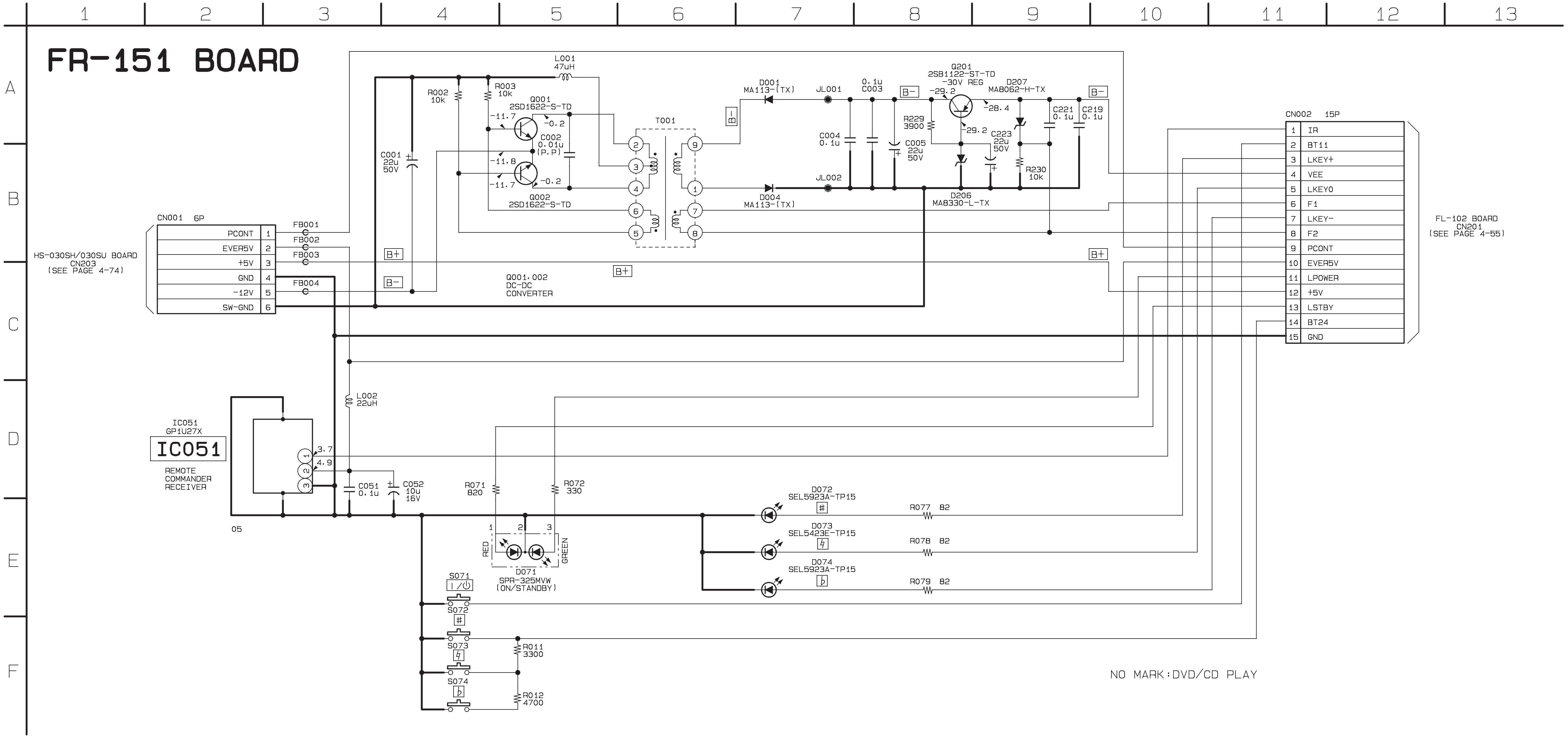
FL-102 (IF CON) SCHEMATIC DIAGRAM **• See page 4-51 for printed wiring board.**

– Ref. No.: FL-102 board; 2,000 series –



FR-151 (IR/POWER SWITCH) SCHEMATIC DIAGRAM

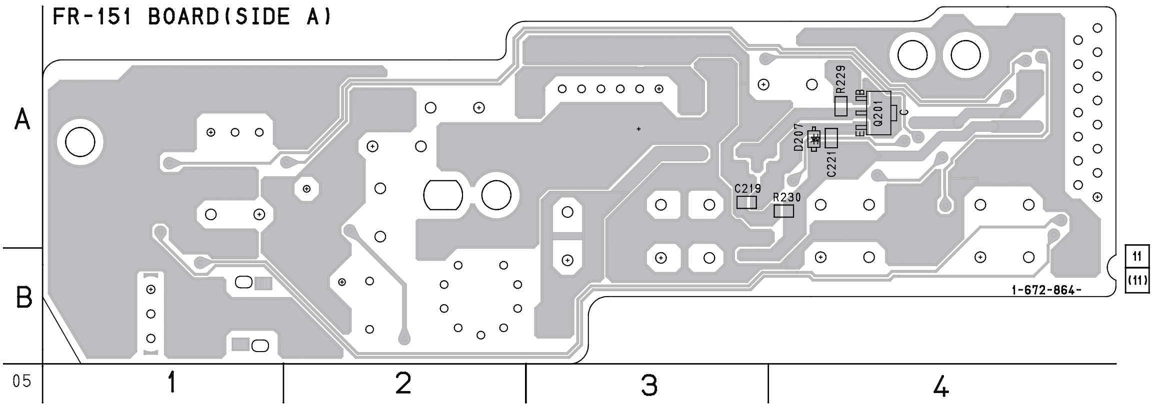
– Ref. No.: FR-151 board; 4,000 series –



FR-151 (IR/POWER SWITCH) PRINTED WIRING BOARD

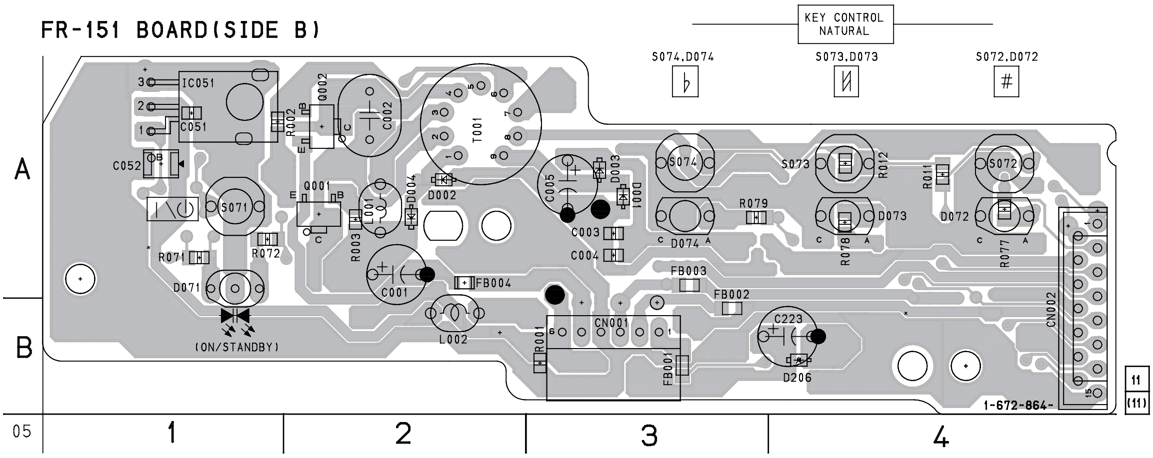
– Ref. No.: FR-151 board; 4,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.



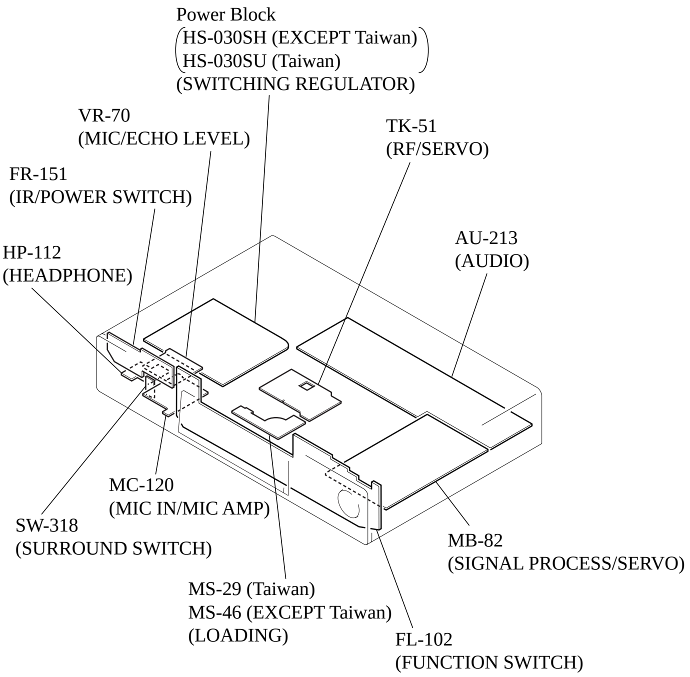
FR-151 BOARD (SIDE A)

D207	B-3
Q201	B-4



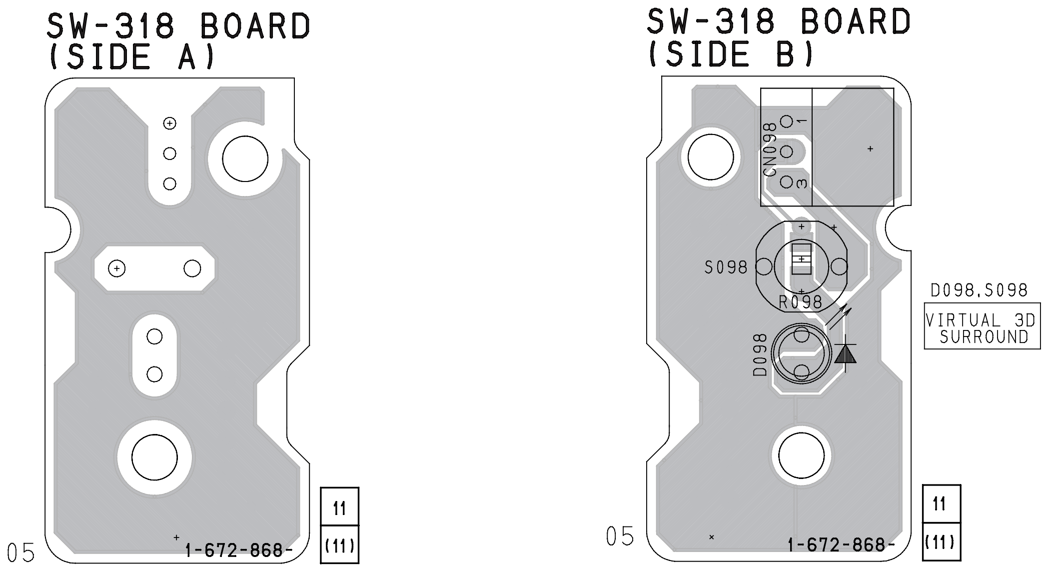
FR-151 BOARD (SIDE B)

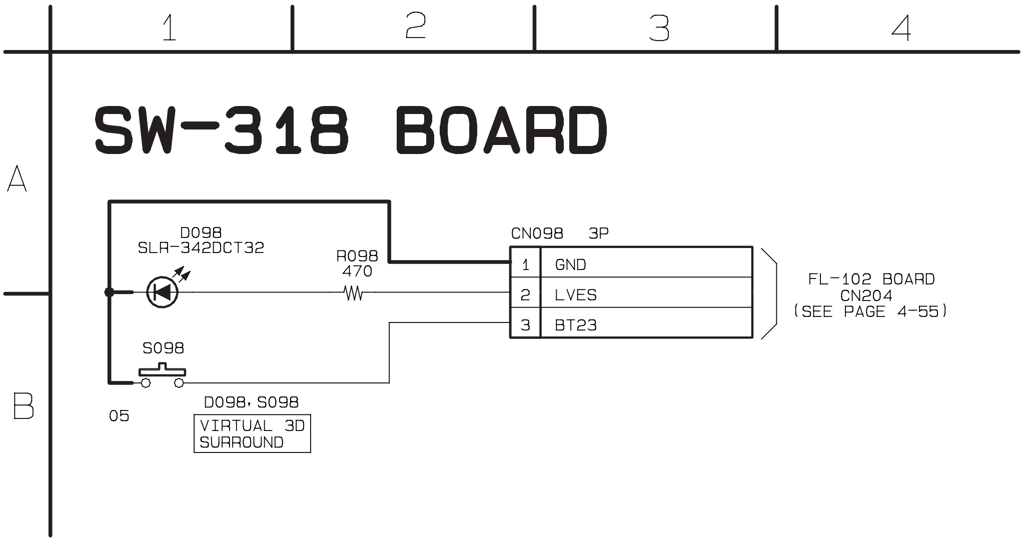
CN001	B-3
CN002	A-4
D001	A-3
D004	A-2
D071	A-1
D072	A-4
D073	A-4
D074	A-3
D206	B-3
IC051	A-1
Q001	A-2
Q002	A-2



SW-318 (SURROUND SWITCH) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
– Ref. No.: SW-318 board; 5,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

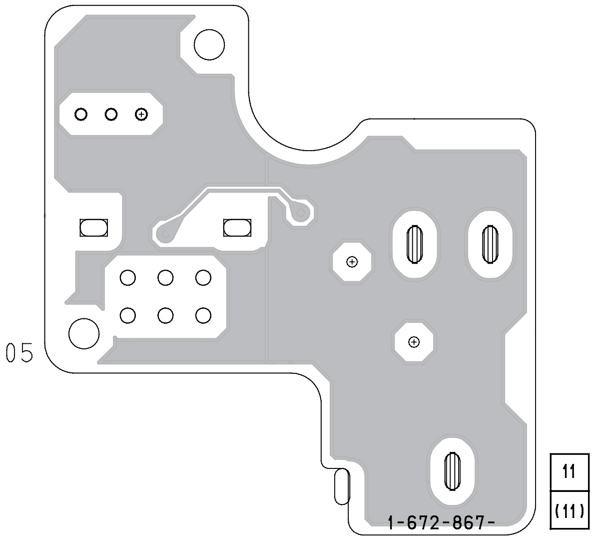




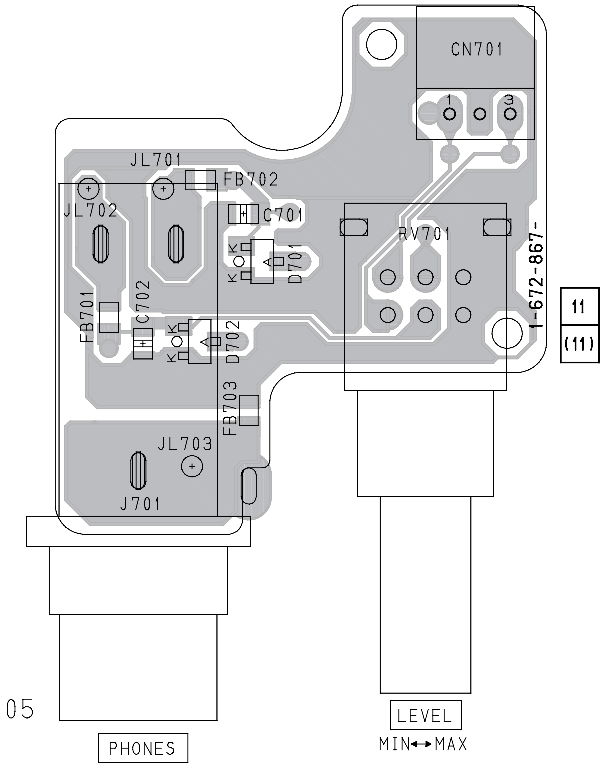
HP-112 (HEADPHONE) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
– Ref. No.: HP-112 board; 2,000 series –

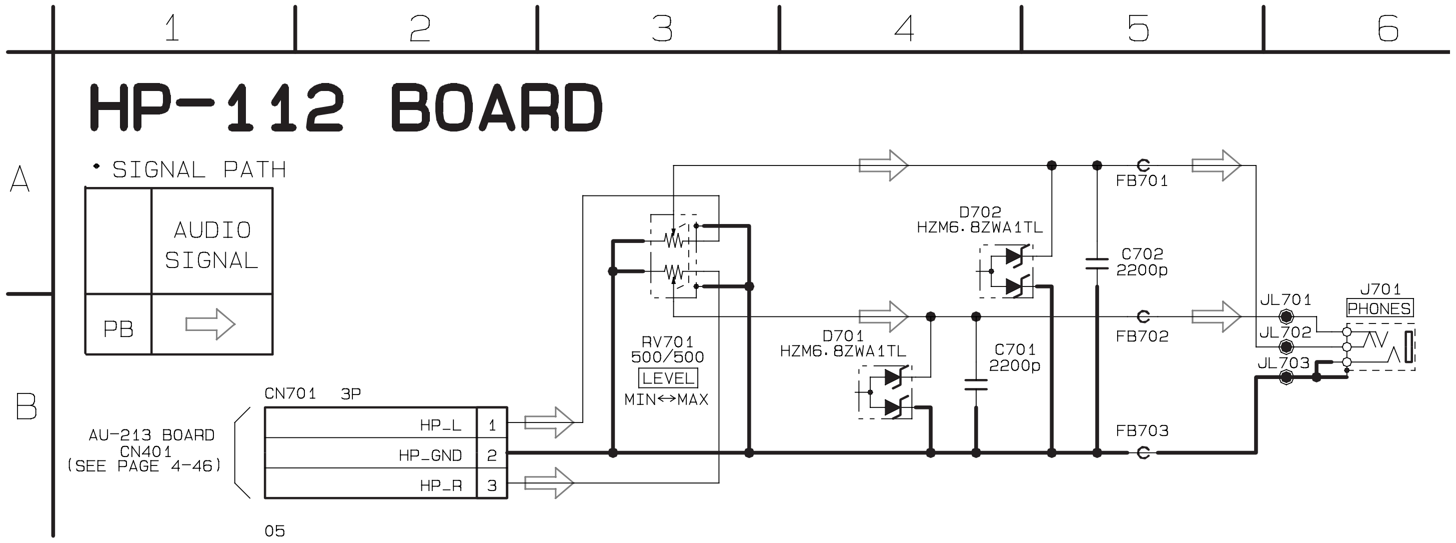
There are few cases that the part isn't mounted in this model is printed on this diagram.

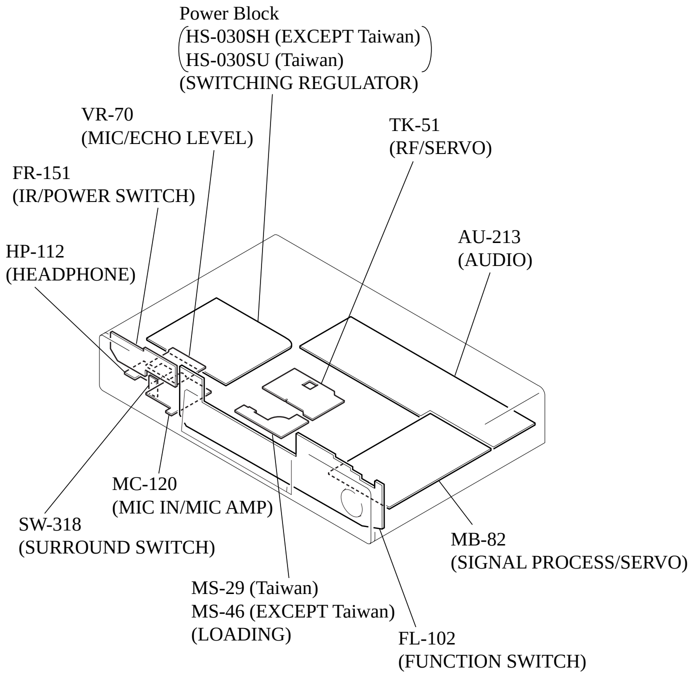
HP-112 BOARD(SIDE A)



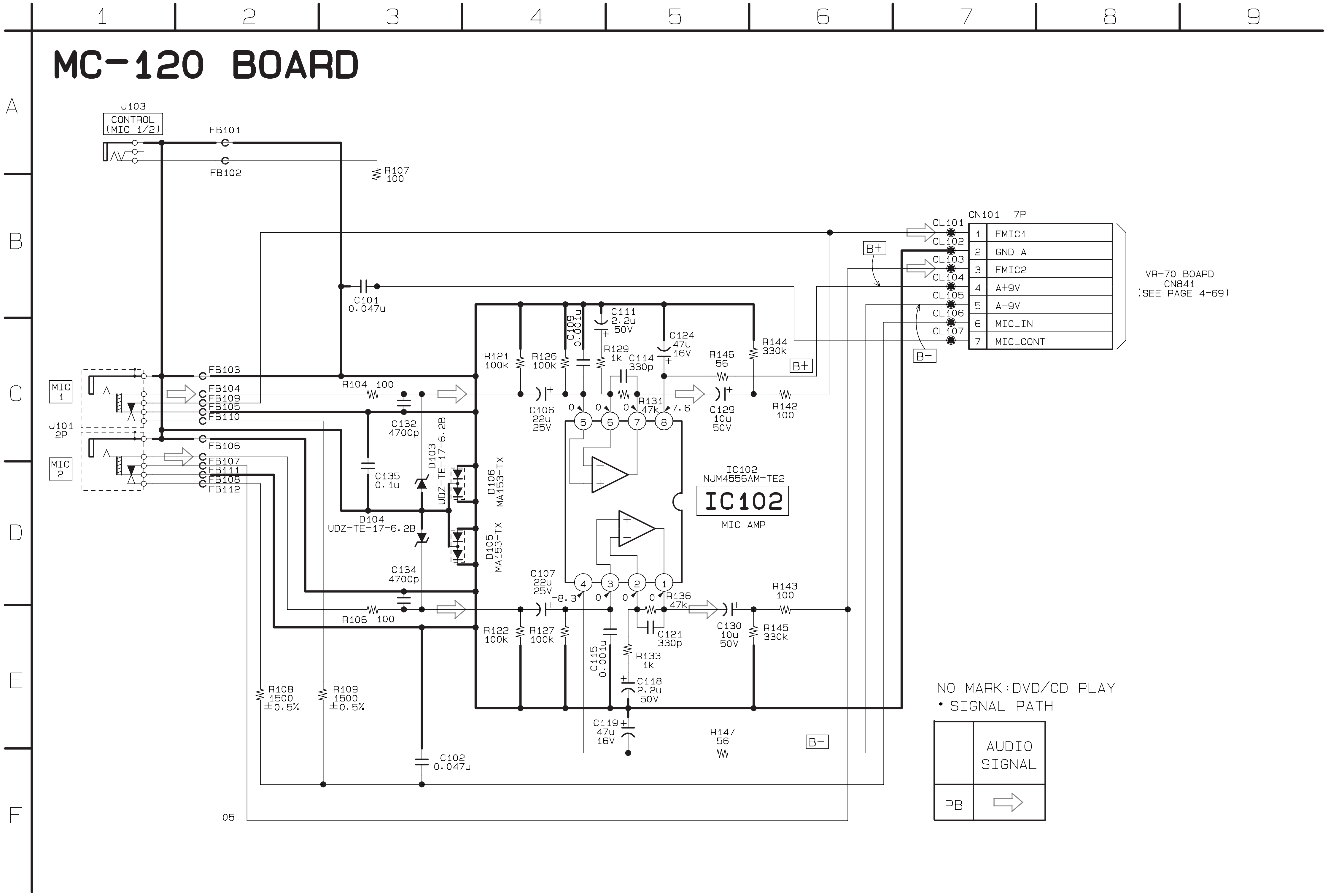
HP-112 BOARD(SIDE B)







MC-120 (MIC IN/MIC AMP) SCHEMATIC DIAGRAM
– Ref. No.: MC-120 board; 2,000 series –



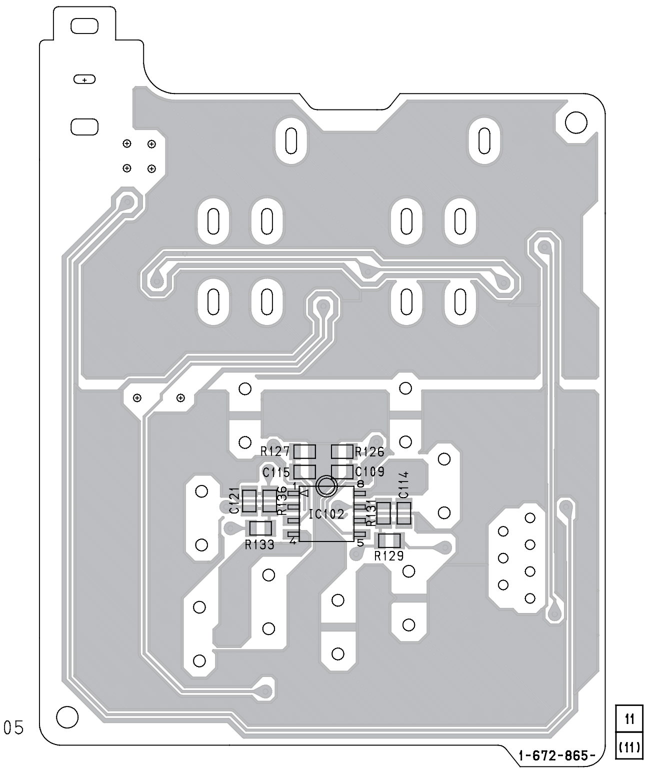
MC-120 (MIC IN/MIC AMP) PRINTED WIRING BOARD

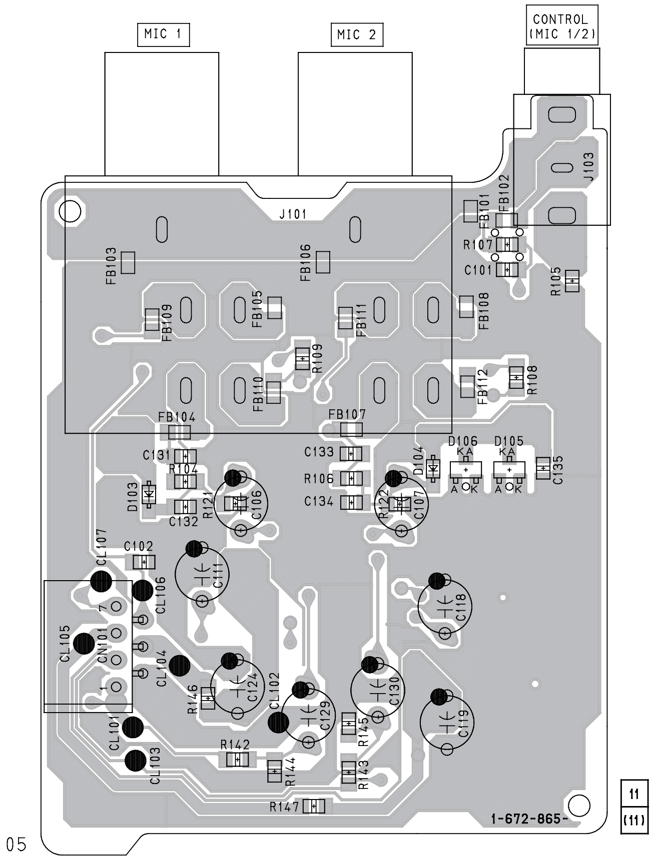
– Ref. No.: MC-120 board; 2,000 series –

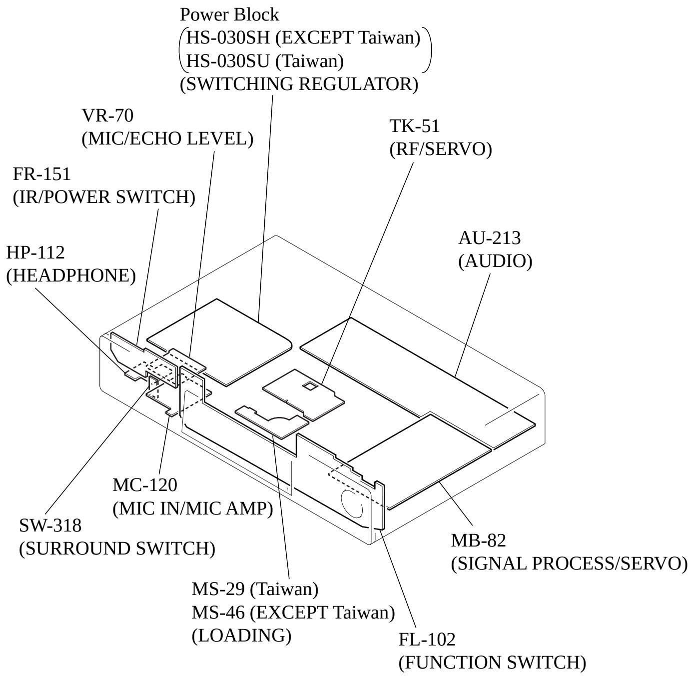
There are few cases that the part isn't mounted in this model is printed on this diagram.

MC-120 BOARD(SIDE B)

MC-120 BOARD(SIDE A)





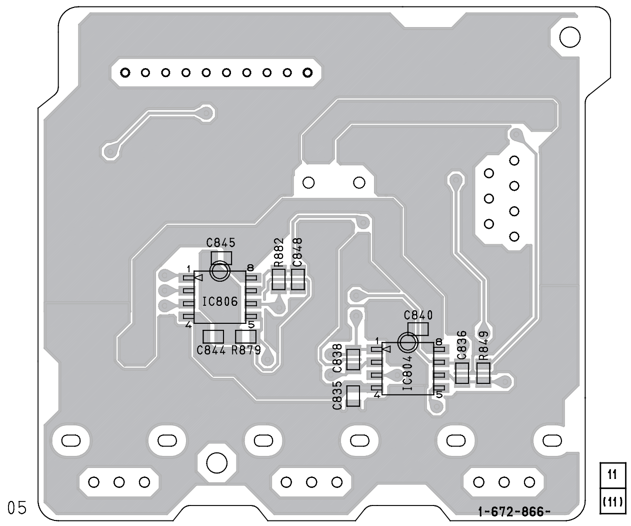


VR-70 (MIC/ECHO LEVEL) PRINTED WIRING BOARD

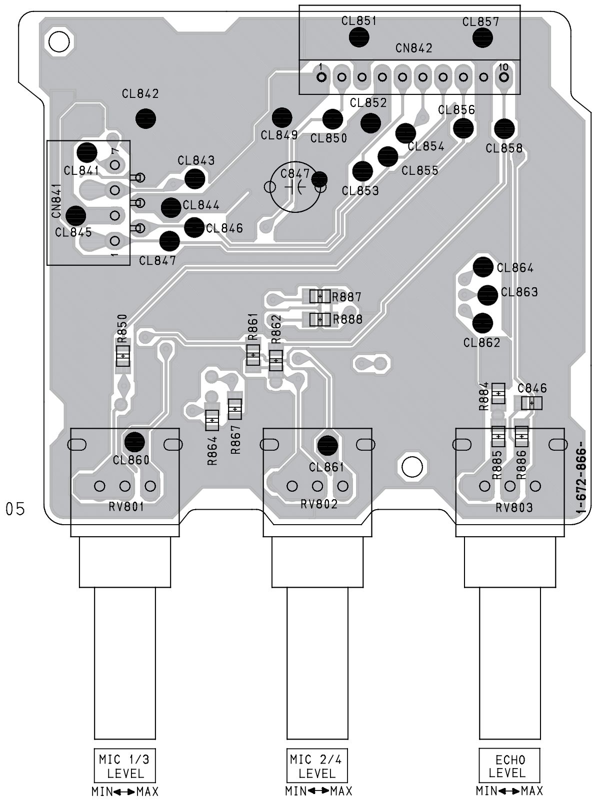
– Ref. No.: VR-70 board; 2,000 series –

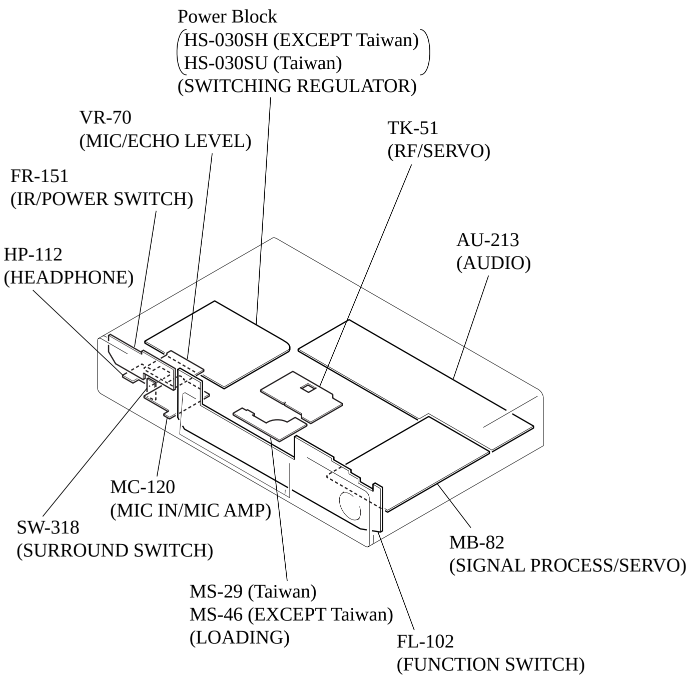
There are few cases that the part isn't mounted in this model is printed on this diagram.

VR-70 BOARD(SIDE A)

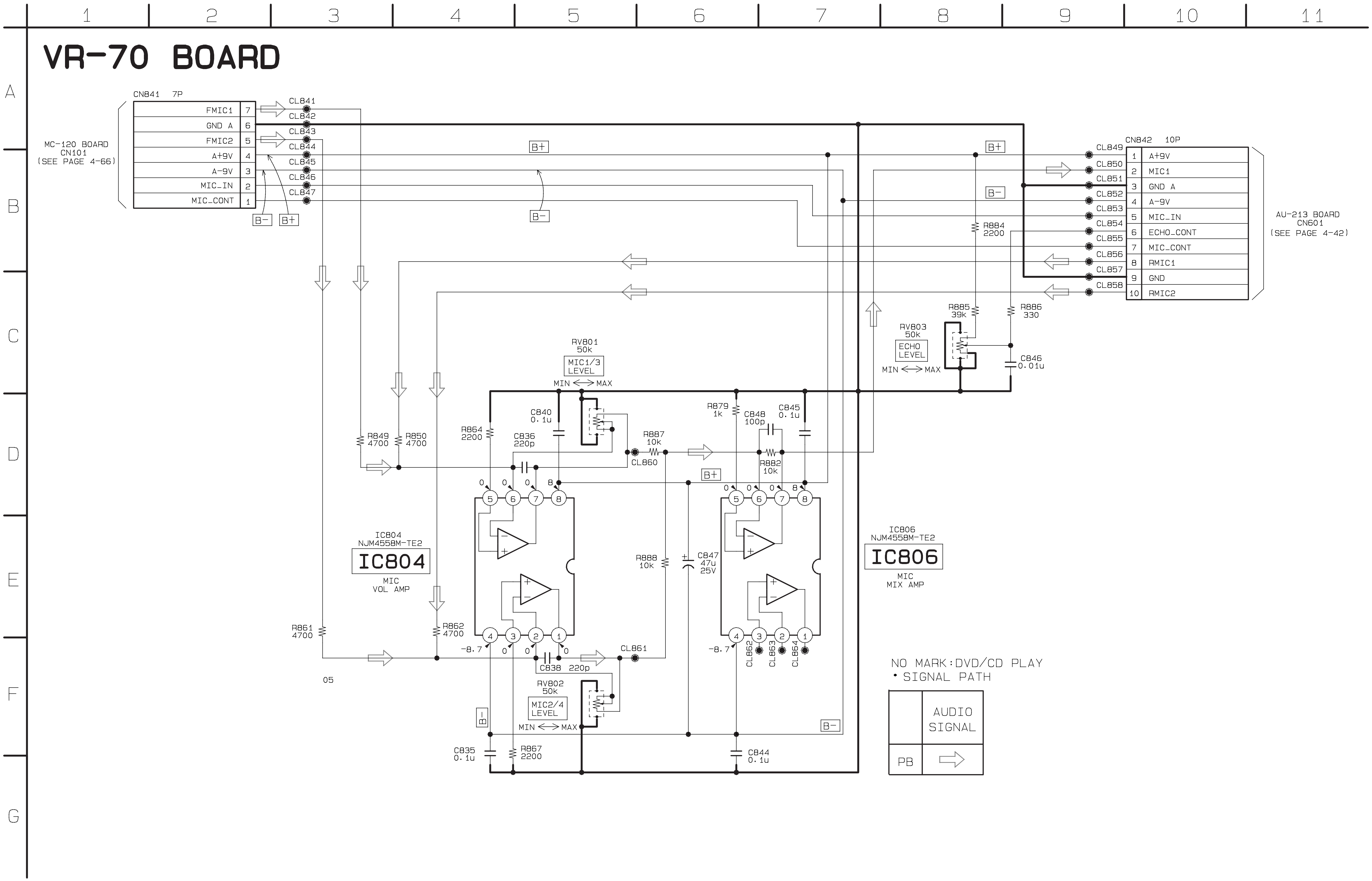


VR-70 BOARD(SIDE B)





VR-70 (MIC/ECHO LEVEL) SCHEMATIC DIAGRAM
– Ref. No.: VR-70 board; 2,000 series –



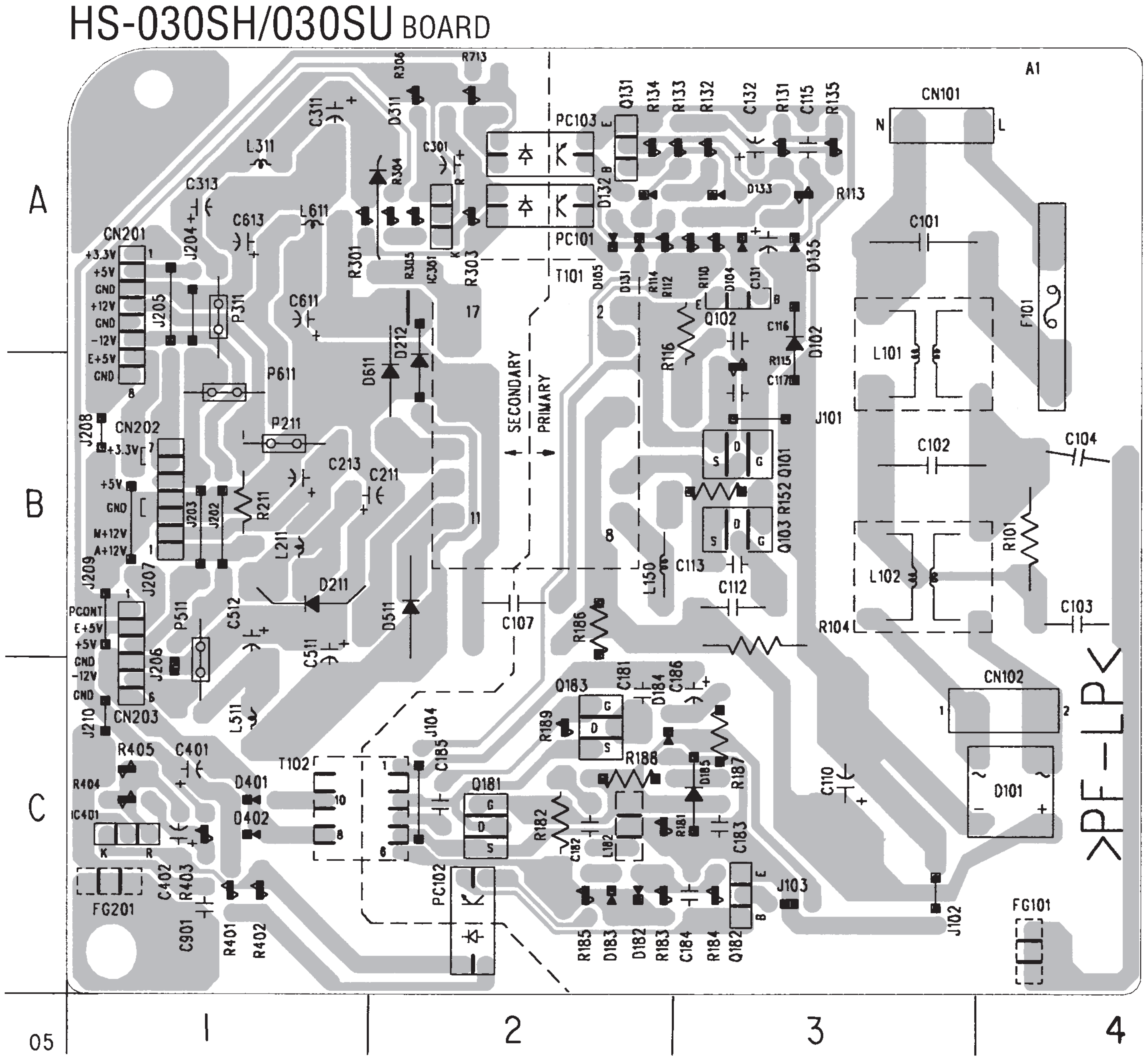
HS-030SH/030SU (SWITCHING REGULATOR) PRINTED WIRING BOARD

– Ref. No.: HS-030SH/030SU board; 6,000 series –

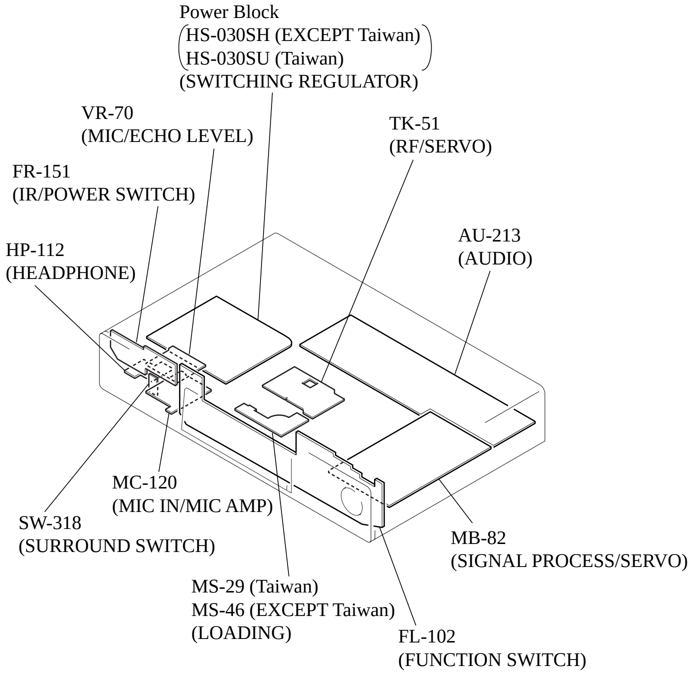
There are few cases that the part isn't mounted in this model is printed on this diagram.

HS-030SH/030SU BOARD

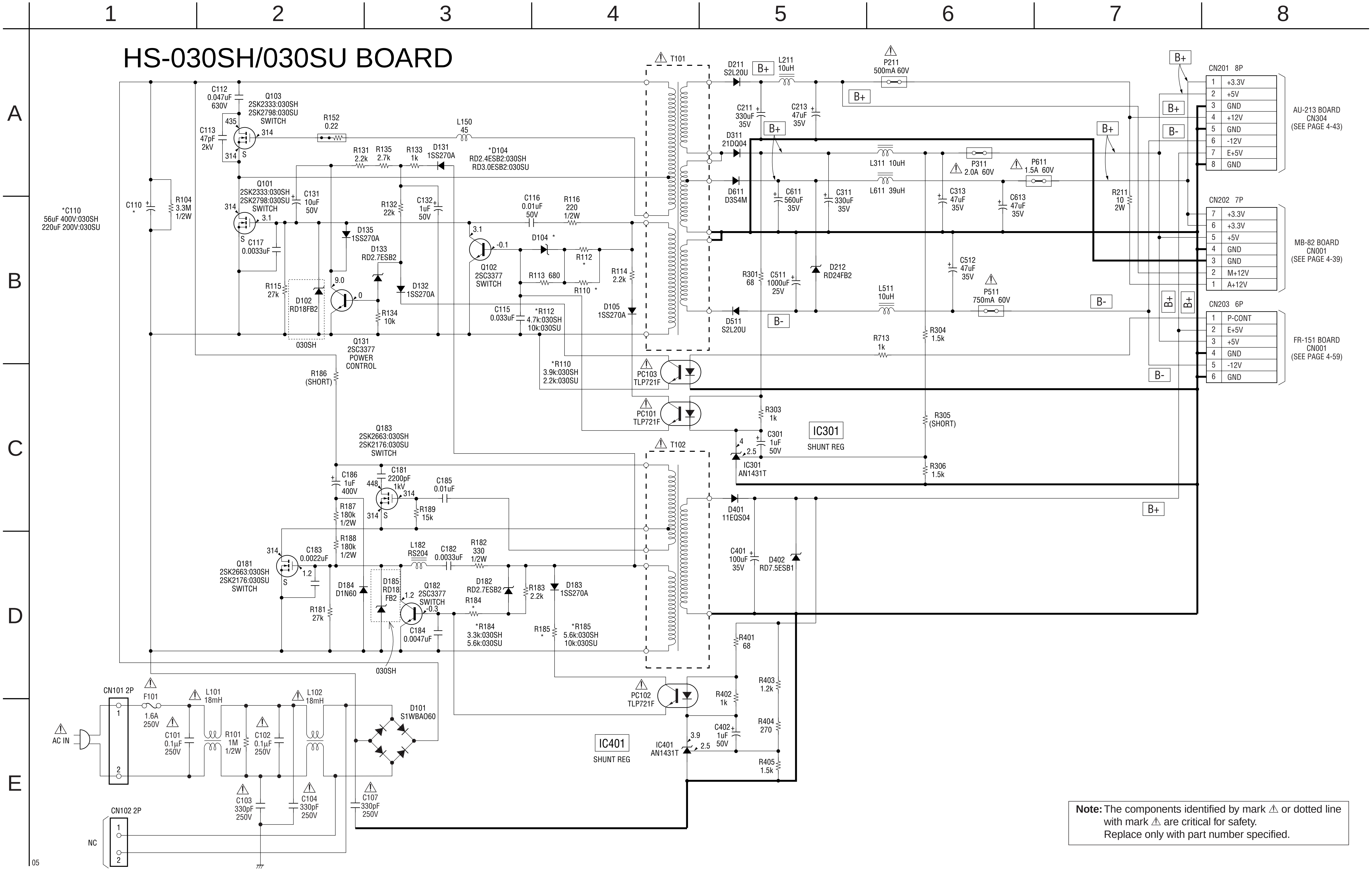
CN101	A-3
CN102	C-4
CN201	A-1
CN202	B-1
CN203	B-1
D101	C-4
D102	A-3
D104	A-3
D105	A-2
D131	A-2
D132	A-2
D133	A-3
D135	A-3
D182	C-2
D183	C-2
D184	C-2
D185	C-3
D211	B-1
D212	B-2
D311	A-2
D401	C-1
D402	C-1
D511	B-2
D611	B-2
IC301	A-2
IC401	C-1
Q101	B-3
Q102	A-3
Q103	B-3
Q131	A-2
Q181	C-2
Q182	C-3
Q183	C-2



HS-030SH:1-468-359-11
HS-030SU:1-468-359-31



HS-030SH/030SU (SWITCHING REGULATOR) SCHEMATIC DIAGRAM
– Ref. No.: HS-030SH/030SU board; 6,000 series –



Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SECTION 5
IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL PIN FUNCTION (MB-82 BOARD IC202)

Pin No.	Pin name	I/O	Function
1	PB5	O	Analog filter gain control
2	PB6	O	VES gain control “H”: VES
3	PB7	O	Rear CH boost control “H”: rear boost
4	VCC3	-	Power supply
5	CLK	O	CPU clock out (25 MHz)
6	$\overline{\text{CS5}}$	O	Not used
7	$\overline{\text{CS4}}$	O	Chip select signal for ARP, SERVO DSP and HGA
8	$\overline{\text{CS3}}$	O	Chip select signal for SDRAM and AV DEC
9	$\overline{\text{CS2}}$	O	Chip select signal for REG and AV DEC
10	$\overline{\text{CS1}}$	O	Chip select signal for external SRAM
11	$\overline{\text{CS0}}$	O	Chip select signal for external FLASH ROM
12	$\overline{\text{NMI}}$	I	Not used (fixed at “H”)
13	$\overline{\text{HST}}$	I	Not used (fixed at “H”)
14	$\overline{\text{RST}}$	I	Reset signal input from IF CON
15	GND	-	Ground
16	MD0	I	Input of mode select 0 (fixed at “1”)
17	MD1	I	Input of mode select 1 (fixed at “0”)
18	MD2	I	Input of mode select 2 (fixed at “0”)
19	RDY	I	Wait signal input
20	P81	I	Test terminal (fixed at “H”)
21	P82	I	Test terminal (fixed at “L”)
22	$\overline{\text{RD}}$	O	Read enable signal output
23	$\overline{\text{WR0}}$	O	High byte write enable signal output (16 bit and 8 bit)
24	$\overline{\text{WR1}}$	O	Low byte write enable signal output (16 bit only)
25-32	D16-D23	I/O	Data bus D0-D7 (16 bit)
33-39	D24-D30	I/O	Data bus D8-D14 (16 bit), D0-D6 (8 bit)
40	GND	-	Ground
41	D31	I/O	Data bus D15 (16 bit), D7 (8 bit)
42	A00	O	Address bus A0
43	VCC5	-	Power supply
44-64	A01-A21	O	Address bus A1-A21
65	GND	-	Ground
66	P66	O	PLL IC control output “H”: DOUBLE
67	P67	I	DIAG mode signal input “L”: DIAG

Pin No.	Pin name	I/O	Function
68	EOP0	I	Not used
69	AVCC	-	Power supply
70	AVRH	-	Reference power supply (+3.3V)
71	AGND	-	Ground
72	AN0	I	Set of mode 0
73	AN1	I	Set of mode 1
74	AN2	I	Set of mode 2
75	AN3	I	Set of mode 3 (fixed at “H”)
76	SI0	I	Serial data input from IF CON and EEPROM
77	SO0	O	Serial data output to IF CON and EEPROM
78	SC0	O	Serial clock output to IF CON and EEPROM
79	SI1	I	Serial bus 1 (for data input)
80	SO1	O	Serial bus 1 (for data output)
81	SI2	I	Serial bus 2 (for data input)
82	SO2	O	Serial bus 2 (for data output)
83	PF7	O	Reset signal output
84	DACK1	O	Output of DMA-ACK 0 to AV DEC
85	DACK0	O	Output of DMA-ACK 1 to AV DEC
86	DREQ1	I	Input of DMA-REQ 0 from AV DEC
87	DREQ0	I	Input of DMA-REQ 1 from AV DEC
88	INT3	I	Input of interrupt from HGA
89	SC1	O	Serial clock output
90	GND	-	Ground
91	X1	O	Clock output (12.5MHz)
92	X0	I	Clock input (12.5MHz)
93	VCC5	-	Power supply
94	INT1	I	Input of interrupt ARP and SERVO DSP
95	INT0	I	Input of interrupt from AV DEC
96	PB0	I	Rear panel lime input select (“H”: DISC “L”: EXT)
97	PB1	O	Chip select signal to IF CON
98	PB2	O	Chip select signal to DAC (Lt and Rt)
99	PB3	O	Chip select signal to DAC (L and R)
100	PB4	O	DVD/CD select (“H”: 44.1kHz “L”: 48kHz)

SECTION 6
TEST MODE

6-1. GENERAL DESCRIPTION

The Test Mode allows you to make diagnosis and adjustment easily using the remote commander and monitor TV. The instructions, diagnostic results, etc. are given on the on-screen display (OSD).

6-2. STARTING TEST MODE

Press [TITLE], [CLEAR], [POWER] buttons on the remote commander in this order with the power of main unit in OFF status, and the Test Mode starts, then the menu shown below will be displayed on the TV screen. At the bottom of menu screen, the model name and revision number are displayed.
To execute each function, select the desired menu and press its number on the remote commander.
To exit from the Test Mode, press the POWER button.

```
Test Mode Menu

0. Syscon Diagnosis
1. Drive Auto Adjustment
2. Drive Manual Operation
3. Mecha Aging
4. Emergency History
5. Version Information
6. Video Level Adjustment
Exit: Power Key
_
Model    : DPX12xxxx
Revision: 1.xxx
```

6-3. SYSCON DIAGNOSIS

The same contents as board detail check by serial interface can be checked from the remote commander.
On the Test Mode Menu screen, press [0] key on the remote commander, and the following check menu will be displayed.

```
    ### Syscon Diagnosis ###
           Check Menu
0. Quit
1. All
2. Version
3. Peripheral
4. Servo
5. Supply
6. AV Decoder
7. Video
8. Audio
_
```

0. Quit

Quit the Syscon Diagnosis and return to the Test Mode Menu.

1. All

All items continuous check
This menu checks all diagnostic items continuously. Normally, all items are checked successively one after another automatically unless an error is found, but at a certain item that requires judgment through a visual check to the result, the following screen is displayed for the key entry.

```
    ### Syscon Diagnosis ###

Diag All Check
No. 2 Version

 2-3. ROM Check Sum
Check Sum = xxxx



Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

For the ROM Check, the check sum calculated by the Syscon is output, and therefore you must compare it with the specified value for confirmation.
Following the message, press [NEXT] key to go to the next item, or [PREV] key to repeat the same check again. To quit the diagnosis and return to the Check Menu screen, press [STOP] or [ENTER] key. If an error occurred, the diagnosis is suspended and the error code is displayed as shown below.

```
    ### Syscon Diagnosis ###




 3-3. EEPROM Check
Error 03: EEPROM Write/Reed N
Address    : 00000001
Write Data : 2492
Read Data  : 2490
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

Press [STOP] key to quit the diagnosis, or [PREV] key to repeat the same item where an error occurred, or [NEXT] key to continue the check from the item next to faulty item.

Submenu

Selecting 2 and subsequent items calls the submenu screen of each item.
For example, if "5. Supply" is selected, the following submenu will be displayed.

```
    ### Syscon Diagnosis ###
           Check Menu
          No. 5 Supply
0. Quit
1. All
2. ARP Register Check
3. ARP to RAM Data Bus
4. ARP to RAM Address Bus
5. ARP RAM Check
_
```

0. Quit

Quit the submenu and return to the main menu.

1. All

All submenu items continuous check
This menu checks 2 and subsequent items successively. At the item where visual check is required for judgment or an error occurred, the checking is suspended and the message is output for key entry. Normally, all items are checked successively one after another automatically unless an error is found.

Selecting 2 and subsequent items executes respective menus and outputs the results.
For the contents of each submenu, see "Check Items List".

General Description of Checking Method

2. Version

(2-2) Revision
ROM revision number is displayed.
Error: Not detected.
The revision number defined in the source file of ROM (IC205) is displayed with four digits.

(2-3) ROM Check Sum
Check sum is calculated.
Error: Not detected.
The 8-bit data are added at addresses 0x000F0000 ~ 0x002EFFFF of ROM (IC205) and the result is displayed with 4-digit hexadecimal number. Error is not detected. Compare the result with the specified value.

(2-4) Model Type
Model code is displayed.
Error: Not detected.
The model code read from EEPROM (IC201) is displayed with 2-digit hexadecimal number.

	Model Type	
DVP-K880D (Chinese)	5	0
DVP-K880D (EXCEPT Chinese)	5	1

(2-5) Region
Region code is displayed.
Error: Not detected.
The region code determined from the model code is displayed.

3. Peripheral

(3-2) Gate Array Check
Data write → read, and accord check
Error 02: Gate array write/read discord
Data 0x00~0xFF are written to the address 0xF of GA (IC601), then read and checked if they accord.

(3-3) EEPROM Check
Data write → read, and accord check
Error 03: EEPROM write/read discord
Data 0x9249, 0x2942, 0x4294 are written to addresses 0x00~0xFF of EEPROM (IC201), then read and checked. Before writing, the data are saved, then after checking, they are written to restore the contents of EEPROM.

(3-4) NAND Flash Check
Data clear → write → read, and accord check
Error 04: Clear error
05: Write error
06: Read data discord
21: Faulty blocks exceed 10
The data clear, write, read, and check are executed to the block 0 of Flash memory (IC602).
In case of a faulty block, its address is displayed.
An error is output if faulty blocks exceed 10.

4. Servo

(4-2) Servo DSP Check
Data write → read, and accord check
Error 12: Read data discord
Data 0x9249, 0x2942, 0x4294 are written to the address 0x602 of RAM in the Servo DSP (IC701), then read and checked.

(4-3) DSP Driver Test
Test signal data → DSP Driver
Error: Not detected.
Caution: Do not conduct this test with a mechanical deck connected.
The maximum voltage is applied to the Servo Driver IC (IC801, IC802). If mechanical deck is connected, the motor and optics could be damaged. Disconnect mechanical deck following the output message, then enter specified 4- or 5-digit number from the remote commander, and press the [ENTER]. The test is conducted only when the input data accord. Check the output level, then press the [NEXT] to finish the test.
This test is skipped if "All" is selected.

Supplement: How to disconnect mechanical deck
Disconnect flat cables connected to the CN002 and CN003 of MB-82 board. Also, disconnect harness from the CN011.

5. Supply

Caution: Do not conduct this check with a mechanical deck connected.
An access is made to the stream supply and servo control IC (IC303) and external RAM (IC304) using check data. If mechanical deck is connected, the motor and optics could be damaged. This check is also executed by the "All" menu item.

Supplement: How to disconnect mechanical deck
Disconnect flat cables connected to the CN002 and CN003 of MB-82 board. Also, disconnect harness from the CN011.

(5-2) ARP Register Check
Data write → read, and accord check
Error 08: ARP register write, and read data discord
Data 0x00 to 0xFF are written to the TMAX register (address 0xC6) in ARP (IC303), then they are read and checked.

(5-3) ARP to RAM Data Bus
Data write → read, and accord check
Error 09: ARP ←→ RAM data bus error
Data 0x0001 to 0x8000 where one bit each is set to 1 are written to the address 0 of RAM (IC304) connected to the ARP (IC303) through the bus, then they are read and checked. In case of discord, written bit pattern and read data are displayed. If data where multiple bits are 1 are read, the bits concerned may touch each other. Further, if data where certain bit is always 1 or 0 regardless of written data, the line could be disconnected or shorted.

(5-4) ARP to RAM Address Bus
Data write → other address read discord check
Error 10: ARP → RAM address bus error
Caution: Address and data display in case of an error is different from the display of other diagnosis (described later).
Before starting the test, all addresses of RAM (IC304) are cleared to 0x0000.
First, 0xA55A is written to the address 0x00000, and the address data are read and checked from addresses 0x00001 to 0x80000 while shifting 1 bit each. Next, the data at that address is cleared, and it is written to the address 0x00001, and read and checked in the same manner. This check is repeated up to the address 0x80000 while shifting the address data by 1 bit each.
If data other than 0 is read at the addresses except written address, an error is given because all addresses were already cleared to 0. In this check, the error display pattern is different from that of other diagnosis; read data, written address, and read address are displayed in this order. However, the message uses same template, and accordingly exchange Address and Data when reading. The following display, for example,

```
    ### Syscon Diagnosis ###



 5-4. ARP to RAM Address Bus
Error 10: ARP - RAM Address B
Address    : 0000A55A
Write Data : 00000000
Read Data  : 00080000
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

shows the data 0xA55A was read from address 0x00080000 though it was written to the address 0x00000000. This implies that these addresses are in the form of shadow. Also, if the read data is not 0xA55A, another error will be present.

(5-5) ARP RAM Check
Data write → read, and accord check
Error 11: ARP RAM read data discord
The program code data stored in ROM are copied to all areas of RAM (IC304) connected to the ARP (IC303) through the bus, then they are read and checked if they accord. If the detail check was selected initially, the data are written to all areas and read, then the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 11, and the test is suspended.

6. AV Decoder

(6-2) 1930 RAM
Data write → read, and accord check
Error 13: AVD RAM read data discord
The program code data stored in ROM (IC205) are copied to all areas of RAM (IC402, IC403) connected to the AVD (IC401) through the bus, then they are read and checked if they accord. Further, the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 13, and the test is suspended.

(6-3) 1930 SP
ROM → AVD RAM → Video OUT
Error: Not detected.
The data including sub picture streams in ROM (IC205) are transferred to the RAM (IC402, IC403) in AVD (IC401), and output as video signals from the AVD (IC401).
They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

7. Video

(7-2) Color Bar
AVD color bar command write → Video OUT
Error: Not detected.
The command is transferred to the AVD, and the color bar signals are output from video terminals.
They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

8. Audio

(8-2) ARP → 1930
Error 14: ARP → 1930 video NG
15: ARP → 1930 audio NG

(8-3) Test Tone
A pink noise signal is output from the AVD (IC401) through optical coaxial digital terminal and analog audio terminal.
Error: Not detected.
All channels → 2ch Left → 2ch Right → Front Left → Front Right → Rear Left → Rear Right → Center → Sub Woofer are checked in this order.
Caution: Sub Woofer is checked only for low-frequency components, and no sound will be heard unless a proper super woofer is connected.

(8-4) 2725 Check
Data write → read, and accord check
Error 07: 2725 read data discord
The data 0x249, 0x492, 0x924 are written to addresses 0 and 1 of Karaoke DSP 2725 (IC901), then read and checked if they accord.

Check Items List

2) Version
(2-2) Revision
(2-3) ROM Check Sum
(2-4) Model Type
(2-5) Region

3) Peripheral
(3-2) Gate Array Check
(3-3) EEPROM Check
(3-4) NAND FLASH Check

4) Servo
(4-2) Servo DSP Check
(4-3) DSP Driver Test

5) Supply
(5-2) ARP Register Check
(5-3) ARP to RAM Data Bus
(5-4) ARP to RAM Address Bus
(5-5) ARP RAM Check

6) AV Decoder
(6-2) 1930 RAM
(6-3) 1930 SP

7) Video
(7-2) Color Bar

8) Audio
(8-2) ARP → 1930
(8-3) Test Tone
(8-4) 2725 Check

Error Codes List
00: Error not detected
01: RAM write/read data discord
02: Gate array NG
03: EEPROM NG
04: Flash memory clear error
05: Flash memory write error
06: Flash memory read data discord
08: ARP register read data discord
09: ARP ←→ RAM data bus error
10: ARP ←→ RAM address bus error
11: ARP RAM read data discord
12: Servo DSP NG
13: 1930 SDRAM NG
14: ARP → 1930 video NG
15: ARP → 1930 audio NG
16: 1910 UCODE download NG
17: System call error (function not supported)
18: System call error (parameter error)
19: System call error (illegal ID number)
20: System call error (time out)
21: NAND Flash faulty blocks exceed 10
90: Error occurred
91: User verification NG
92: Diagnosis cancelled

6-4. DRIVE AUTO ADJUSTMENT

On the Test Mode Menu screen, press [1] key on the remote commander, and the drive auto adjustment menu will be displayed.

```
   ## Drive Auto Adjustment ##

         Adjustment Menu

0. ALL
1. DVD-SL
2. CD
3. DVD-DL
4. SACD



                    Exit: RETURN
```

Normally, [0] is selected to adjust DVD (single layer), CD, DVD (dual layer), and SACD in this order. But, individual items can be adjusted for the case where adjustment is suspended due to an error. In this mode, the adjustment can be made easily through the operation following the message displayed on the screen.
The disc used for adjustment must be the one specified for adjustment. However, for SACD disc, use the player with initial data if the disc is not available.

0. ALL

Select [0] and press [ENTER] key, and the servo set data in EEPROM will be initialized. Then, 1. DVD-SL disc, 2. CD disc, 3. DVD-DL disc, and 4. SACD disc are adjusted in this order. Each time one disc was adjusted, it is ejected. Replace it with the specified disc following the message. Though the message to confirm whether discs other than SACD disc are adjusted is not displayed, you can finish the adjustment if pressing the [STOP] button. During adjustment of each disc, the measurement for disc type judgment is made. As automatic adjustment does not judge the disc type unlike conventional models, take care not to insert wrong type discs. Also, do not give a shock during adjustment.

1. DVD-SL (single layer)

Select [1], insert DVD single layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Single Layer Disc Adjustment Steps

1. SLED TILT Reset
2. Disc Check Memory SL
3. Wait 300 msec
4. Set Disc Type SL
5. LD ON
6. Spdl Start
7. Wait 1 sec
8. Focus Servo ON 0
9. Auto Track Offset Adjust
10. CLVA ON
11. Wait 500 msec
12. Tracking ON
13. Wait 1 sec
14. Sled ON
15. Check CLV Lock
16. Auto LFO Adjust
17. Auto Focus Offset Adjust
18. Auto Tilt Position Adjust
19. Auto Focus Gain Adjust
20. Auto Focus Offset Adjust
21. EQ Boost Adjust
22. Auto LFO Adjust
23. Auto Track Gain Adjust
    Search Check
24. 32Tj Fwd
25. 32Tj Rev
26. 500Tj Fwd
27. 500Tj Rev

28. All Servo Stop
29. Eep Copy Loop Filter Offset

2. CD

Select [2], insert CD disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

CD Adjustment Steps
1. Sled Tilt Rest
2. Disc Check Memory CD
3. Wait 500 msec
4. Set Disc Type CD
5. LD ON
6. Spdl Start
7. Wait 500 msec
8. Focus Servo ON 0
9. Auto Track Offset Adjust

10. CLVA ON
11. Wait 500 msec
12. Tracking ON
13. (TC Display Start)
14. Wait 1 sec
15. Jitter Display Start
16. Sled ON
17. Check CLV ON
18. Auto LFO Adjust
19. Auto Focus Offset Adjust
20.
21. Auto Focus Gain Adjust
22. Auto Focus Offset Adjust
23. Eq Boost Adjust
24. Auto LFO Adjust
25. Auto Track Gain Adjust
    Search Check
26. 32Tj Fwd
27. 32Tj Rev
28. 500Tj Fwd
29. 500Tj Rev

30. All Servo Stop

3. DVD-DL (dual layer)

Select [3], insert DVD dual layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Dual Layer Disc Adjustment Steps
1. Sled Tilt Reset
2. Disc Check Memory DL
3. Wait 500 msec
4. Set Disc Type DL
5. LD ON
6. Spdl Start
7. Wait 1 sec
   Layer 1 Adjust
8. Focus Servo ON 0
9. Auto Track Offset Adjust

10. Clva ON
11. Wait 500 msec
12. Tracking ON
13. Wait 500 msec
14. Sled ON
15. Check CLV Lock
16. Auto Loop Filter Offset Auto Focus Adjust
17.
18. Auto Focus Gain Adjust
19. Auto Focus Offset Adjust
20. Eq Boost Adjust
21. Auto Loop Filter Offset
22. Auto Track Gain Adjust
    Search Check
23. 32Tj Fwd
24. 32Tj Rev
25. 500Tj Fwd
26. 500Tj Rev
    Layer 0 Adjust
27. Fj (L1 -> L0)
28. Auto Track Offset Adjust L0

29. Clva ON
30. Wait 500 msec
31. Tracking ON
32. Wait 500 msec
33. Sled ON
34. Check CLV Lock
35. Auto Focus Filter Offset
36. Auto Focus Adjust
37.
38. Auto Focus Gain Adjust
39. Auto Focus Offset Adjust
40. Eq Boost Adjust
41. Auto Loop Filter Offset
42. Auto Track Gain Adjust
    Search Check
43. 32Tj Fwd
44. 32Tj Rev
45. 500Tj fwd
46. 500Tj Rev
    Layer Jump Check
47. Lj (L0 -> L1)
48. Lj (L1 -> L0)

49. All Servo Stop

4. SACD

Select [4], insert SACD disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM. However, if SACD disc is not available, use the player with initial data, skipping the SACD adjustment. In this case, you can finish the adjustment if pressing the [STOP] button.

SACD Adjustment Steps
1. Sled Tilt Reset
2. Set Disc Type CD
3. LD ON
4. Spdl Start
5. Wait 500 msec
6. Focus Servo ON 0
7. Auto track Offset Adjust
8.
9. CLVA ON
10. Wait 500 msec
11. Tracking ON
12. Wait 1 sec
13. Sled ON
14. Check CLV ON
15. Auto Focus Offset Adjust
17.
18. Auto Focus Gain Adjust
19. Auto Focus Offset Adjust
20. Eq Boost Adjust
21. Auto LFO Adjust
22. Auto Track Gain Adjust

23. 32Tj Fwd
24. 32Tj Rev
25. 500Tj Fwd
26. 500Tj Rev

27. All Servo Stop */

6-5. DRIVE MANUAL OPERATION

On the Test Mode Menu screen, select [2], and the manual operation menu will be displayed. For the manual operation, each servo on/off control and adjustment can be executed manually.

```
  ## Drive Manual Operation ##

         Operation Menu
1. Disc type
2. Servo Control
3. Track/Layer Jump
4. Manual Adjustment
5. Auto Adjustment
6. Memory Check

0. Disc Check Memory

                Exit: Return
```

In using the manual operation menu, take care of the following points. These commands do not provide protection, thus requiring correct operation. The sector address or time code field is displayed when a disc is loaded.

1. Set correctly the disc type to be used on the Disc Type screen.
   The disc type must be set after a disc was loaded.
   The set disc type is cleared when the tray is opened.
2. After power ON, if the Drive Manual Operation was selected, first perform "Reset SLED TILT" by opening 1. Disc Type screen.
3. In case of an alarm, immediately press the [STOP] button to stop the servo operation, and turn the power OFF.

Basic operation (controllable from front panel or remote commander)

[POWER]	Power OFF
[STOP]	Servo stop
[OPEN/CLOSE]	Stop+Eject/Loading
[RETURN]	Return to Operation Menu or Test Mode Menu
[NEXT], [PREV]	Transition between sub modes of menu
[1] to [9], [0]	Selection of menu items
Cursor UP/DOWN	Increase/Decrease in manually adjusted value

0. Disc Check Memory

```
              Disc Check



1. SL Disc Check
2. CD Disc Check
3. DL Disc Check



0. Reset SLED TILT
```

On this screen, the mirror time is measured to judge the disc and it is written to the EEPROM. First load DVD SL disc and press [1], next load CD disc and press [2], and finally load DVD DL disc and press [3].
The adjustment must be executed more than once after default data were written. External vibration or shock to the player must not be given. Reference value for DVD is from 10 to 20, and for CD, from 28 to 4F.
Check that the value of CD is larger than that of DVD.
When those values are beyond a range perform this adjustment again.
From this screen, you can go to another mode by pressing [NEXT] or [PREV] key, but you cannot enter this mode from another mode. You can enter this mode from the Operation Menu screen only.

1. Disc Type

```
              Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. SACD     12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. SACD     8 cm
0. Reset SLED TILT
                         EMG. 00
```

On this screen, select the disc type. To select the disc type, press the number of the loaded disc. The selected disc type is displayed at the bottom. Selecting [1] automatically selects and displays the disc type. In case of wrong display, retry “Disc Check Memory”. Also, opening the tray causes the set disc type to be cleared. In this case, set the disc type again after loading.
In performing manual operation, the disc type must be set.
Once the disc type has been selected, the sector address or time code display field will appear as shown below. These values are displayed when PLL is locked.

```
              Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. SACD     12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. SACD     8 cm
0. Reset SLED TILT
        SA.      SI.    EMG. 00
DVD SL 12 cm
```

Display when DVD SL 12cm disc was selected

```
              Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. SACD     12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. SACD     8 cm
0. Reset SLED TILT
         TC.——:——:—— EMG. 00
CD   12 cm
```

Display when CD 12cm disc was selected

[0]	Reset SLED TILT	Reset the Sled and Tilt to initial position.
[1]	Disk Type Check	Judge automatically the loaded disc. As the judged result is displayed at the bottom of screen, make sure that it is correct. If Disc Check Memory menu has not been executed after EEPROM default setting, the disc type cannot be judged. In this case, return to the initial menu and make a check for three types of discs (SL, DL, CD).
[2] to [9]		Select the loaded disc. The adjusted value is written to the address of selected disc. No further entry is necessary if [1] was selected.

2. Servo Control

```
          Servo Control
1. LD          Off R.Sled FWD
2. SP          Off L.Sled REV
3. Focus       Off
4. TRK.        Off
5. Sled        Off
6. CLVA        Off
7. FCS. Srch Off


0. Reset SLED TILT
       SA.—————SI.——— EMG. 00
DVD SL 12 cm
```

On this screen, the servo on/off control necessary for replay is executed. Normally, turn on each servo from 1 sequentially and when CLVA is turned on, the usual trace mode becomes active. In the trace mode, DVD sector address or CD time code is displayed. This is not displayed where the spindle is not locked.
The spindle could run overriding the control if the spindle system is faulty or RF is not present. In such a case, do not operate CLVA.

0	Reset SLED TILT	Reset the Sled and Tilt to initial position.
1	LD	Turn ON/OFF the laser.
2	SP	Turn ON/OFF the spindle.
3	Focus	Search the focus and turn on the focus.
4	TRK	Turn ON/OFF the tracking servo.
5	Sled	Turn ON/OFF the sled servo.
6	CLVA	Turn ON/OFF normal servo of spindle servo.
7	FCS. Srch	Apply same voltage as that of focus search to the focus drive to check the focus drive system.
→	Sled FWD	Move the sled outward. Perform this operation with the tracking servo turned off.
←	Sled REV	Move the sled inward. Perform this operation with the tracking servo turned off.
↑	Tilt UP	Move the tilt upward.
↓	Tilt DOWN	Move the tilt downward.

The following menus are normally not used.

3. Track/Layer Jump

4. Manual Adjustment

5. Auto Adjustment

The persons who do not know well about these menus should not use them.

6. Memory Check

```
EEPROM DATA
                CD       – DVD –
ID No. 00      SACD     SL   L0   L1
Focus Gain     xx xx    xx   xx   xx
TRK. Gain      xx xx    xx   xx   xx
Focus Offset   xx xx    xx   xx   xx
TRK. Offset    xx xx    xx   xx   xx
L. F. Offset   xx xx    xx   xx   xx
EQ Boost       xx xx    xx   xx   xx
Jitter         xx xx    xx   xx   xx
Mirror Time    xx xx    xx   xx   xx
_
CLEAR: Default Set
```

This screen displays current servo adjusted data stored in the EEPROM. Though adjusted data can be initialized with the CLEAR key, they cannot be restored after initialization.
So, before clearing, make a note of the adjusted data.
For reference, the drive has been designed so that the gain center value is 20 and offset value is 80. Other values will be in a range of 10 to 80. If extreme value such as 00 or FF is set, adjustment will be faulty. In such a case, check for disc scratch or cable disconnection, then perform adjustment again.

6-6. MECHA AGING

```
        ### Mecha Aging ###



Press OPEN key



Abort: STOP key
```

On the Test Mode Menu screen, selecting 3 executes the aging of mechanism. First, open the tray and load a disc. Press the PLAY key, and the aging will start. When the tray is closed, the disc type and size are judged and displayed. During aging, the repeat cycle is displayed. Aging can be aborted at any time by pressing the STOP key. After the operation has stopped, unload the disc and press again the STOP key or the RETURN key to return to the Test Mode Menu.

6-7. EMERGENCY HISTORY

```
       ### MEG. History ###

Laser Hours     CD   xxxxxxxh
                DVD  xxxxxxxh

1. 00 00 00 00  00 00 00 00
   00 00 00 00  00 00 00 00

2. 00 00 00 00  00 00 00 00
   00 00 00 00  00 00 00 00

Select: 1 – 9   Scroll: UP/DOWN
(1: Last EMG.)   Exit: Return
```

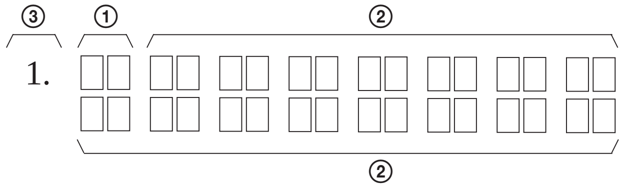
On the Test Mode Menu screen, selecting 4 displays the information such as servo emergency history. The history information from last 1 up to 10 can be scrolled with ↑ key or ↓ key. Also, specific information can be displayed by directly entering that number with ten keys.

The upper two lines display the laser ON total hours. Data below minutes are omitted.

Clearing History Information

Clearing laser hours
◎ Press DISPLAY and CLEAR keys in this order.
Both CD and DVD data are cleared.
Clearing emergency history
◎ Press TITLE and CLEAR keys in this order.
Initializing set up data
◎ Press DVD MENU and CLEAR keys in this order.
The data have been initialized when “Set Up Initialized” message is displayed. The EMG. History screen will be restored soon.

How to see Emergency History



① : Emergency Code
② : Don't Care
These codes are used for verification of software designing.
③ : Historical order 1 to 9

Emergency Codes List

10: Communication to IC001 (TK-51 board) failed.
11: Each servo for focus, tracking, and spindle is unlocked.
12: Communication to EEPROM, IC201 (MB-82 board) failed.
13: Writing of hours meter data to EEPROM, IC201 (MB-82 board) failed.
14: Communication to Servo DSP IC701 (MB-82 board) failed, or Servo DSP is faulty.
20: Initialization of tilt servo and sled servo failed. They are not placed in the initial position.
21: Tilt servo operation error
22: Syscon made a request to move the tilt servo to wrong position.
23: Sled servo operation error
24: Syscon made a request to move the sled servo to wrong position.
30: Tracking balance adjustment error
31: Tracking gain adjustment error
32: Focus balance adjustment error
33: Focus bias adjustment error
34: Focus gain adjustment error
35: Tilt servo adjustment error
36: RF equalizer adjustment error
37: RF group delay adjustment error
38: Jitter value after adaptive servo operation is too large.
40: Focus servo does not operate.
41: With a dual layer (DL) disc, focus jump failed.50: CLV (spindle) servo does not operate.
51: Spindle does not stop.
60: With a DVD disc, Syscon made a request to seek nonexistent address.
61: With a CD disc, Syscon made a request to seek nonexistent address.
62: With a CD disc, Syscon made a request to seek nonexistent track No. and index No.
63: With a DVD disc, seeking of target address failed.
64: With a CD disc, seeking of target address failed.
65: With a CD disc, seeking of target index failed.
70: With a DVD disc, physical information data could not be read.
71: With a CD disc, TOC data could not be read.
80: Disc type judgment failed.
81: As disc type judgment failed, retry was repeated.
82: As disc type judgment failed, a measurement error occurred.
83: Disc type could not be judged within the specified time.
84: Illegal command code was received from Syscon.
85: Illegal command was received from Syscon.

6-8. VERSION INFORMATION

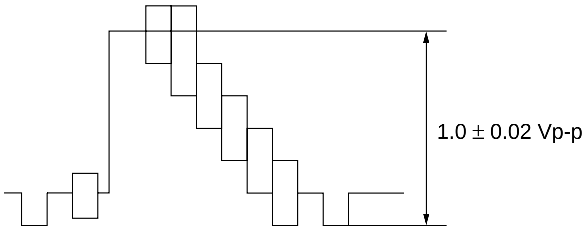
```
    ## Version Information ##

IF con.    Ver. x. xxx (xxxx)
           Group    00

SYScon.    Ver. x. xxx (xxxx)
           Model    xx
           Region   0x
           SW1      ??
           SW2      ??

Exit: RETURN
```

On the Test Mode Menu screen, selecting [5] displays the ROM version and region code.
The parenthesized hexadecimal number in version field is checksum value of ROM.

6-9. VIDEO LEVEL ADJUSTMENT

On the Test Mode Menu screen, selecting [6] displays color bars for video level adjustment. During display of color bars, OSD disappears but the menu screen will be restored if pressing any key.

Measurement point : LINE OUT VIDEO
(75 Ω terminating resistance)
Measuring instrument : Oscilloscope
Adjustment device : RV401 on MB-82 board
Specified value : 1.0 ± 0.02 Vpp



SECTION 7
ELECTRICAL ADJUSTMENTS

In making adjustment, refer to 7-3. Adjustment Related Parts Arrangement.

Note: During diagnostic check, the characters and color bars can be seen only with the NTSC monitor. Therefore, for diagnostic check, use the monitor that supports both NTSC and PAL modes

This section describes procedures and instructions necessary for adjusting electrical circuits in this set.

Instruments required:

1) Color monitor TV
2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
3) Frequency counter (over 8 digits)
4) Digital voltmeter
5) Standard commander (RMT-D110E/D111E)
6) DVD reference disc
   HLX-501 (J-6090-071-A) (dual layer)
   HLX-503 (J-6090-069-A) (single layer)
   HLX-504 (J-6090-088-A) (single layer)
   HLX-505 (J-6090-089-A) (dual layer)
7) SACD reference disc
   HLXA-509 (J-6090-090-A)

7-1. POWER SUPPLY ADJUSTMENT

1. Power Supply Check (HS-030SH/030SU BOARD)

Mode	E-E
Instrument	Digital voltmeter
+5 V Check	
Test point	CN202 pin ⑤
Specification	5.0 ± 0.2 Vdc
+3.3 V Check	
Test point	CN202 pin ⑦
Specification	3.3 ± 0.2 Vdc
EVER+5 V Check	
Test point	CN203 pin ②
Specification	5.0 ± 0.2 Vdc
P_CONT Check	
Test point	CN203 pin ①
Specification	4V – 5 Vdc
A +12 V Check	
Test point	CN202 pin ①
Specification	$9.5^{+1.5}_{-0.5}$ Vdc
–12 V Check	
Test point	CN203 pin ⑤
Specification	–12.0 ± 1.0 Vdc
M +12 V Check	
Test point	CN202 pin ②
Specification	12.0 ± 1.0 Vdc

Checking method:

1) Confirm that each voltage satisfies the specification.

7-2. ADJUSTMENT OF VIDEO SYSTEM

1. Video Level Adjustment (MB-82 BOARD)

<Purpose>

This adjustment is made to satisfy the NTSC standard, and if not adjusted correctly, the brightness will be too large or small.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	LINE OUT (VIDEO) connector (75 Ω terminated)
Instrument	Oscilloscope
Adjusting element	RV401
Specification	1.0 ± 0.02 Vp-p

Adjusting method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Adjust the RV401 to attain 1.0 ± 0.02 Vp-p.

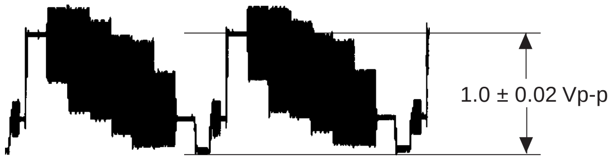


Figure 7-1

2. S-terminal Output Check (MB-82 BOARD)

<Purpose>

Check S-terminal video output. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with a S-terminal cable.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.1 Vp-p

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-Y level is 1.0 ± 0.1 Vp-p.

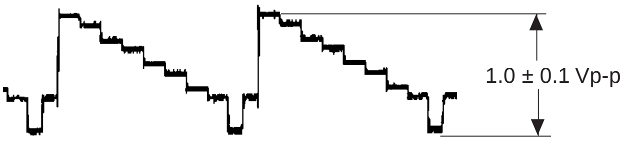


Figure 7-2

3. Checking Component Video Output B-Y (MB-82 BOARD)

<Purpose>

This checks component video output B-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (B-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 70 mVp-p

Checking method:

1) Confirm that the B-Y level is 700 ± 70 mVp-p.

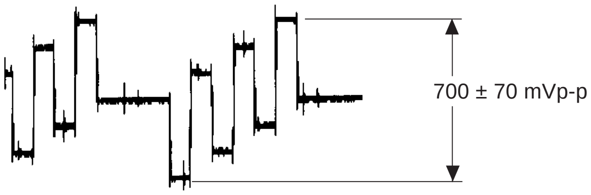


Figure 7-3

4. Checking Component Video Output R-Y (MB-82 BOARD)

<Purpose>

This checks component video output R-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (R-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 70 mVp-p

Checking method:

1) Confirm that the R-Y level is 700 ± 70 mVp-p.

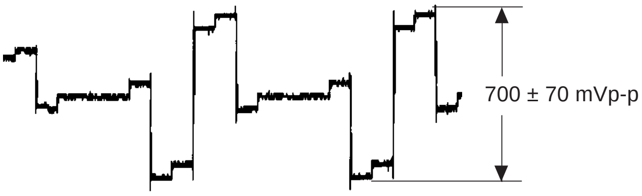


Figure 7-4

5. **Checking Component Video Output Y (MB-82 BOARD)**

<Purpose>

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.1 Vp-p

Checking method:

1) Confirm that the Y level is 1.0 ± 0.1 Vp-p.

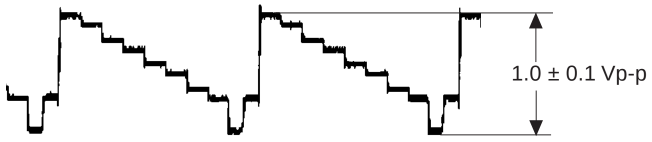


Figure 7-5

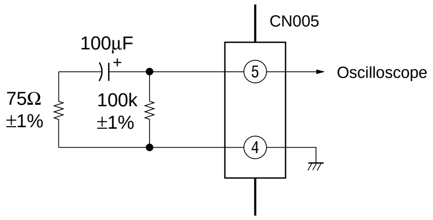
6. **Checking S Video Output S-C (MB-82 BOARD)**

<Purpose>

This checks whether the S-C satisfies the NTSC Standard. If it is not correct, the colors will be too dark or light.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	CN005 pin ⑤
Instrument	Oscilloscope
Specification	286 ± 50 mVp-p

Connection:



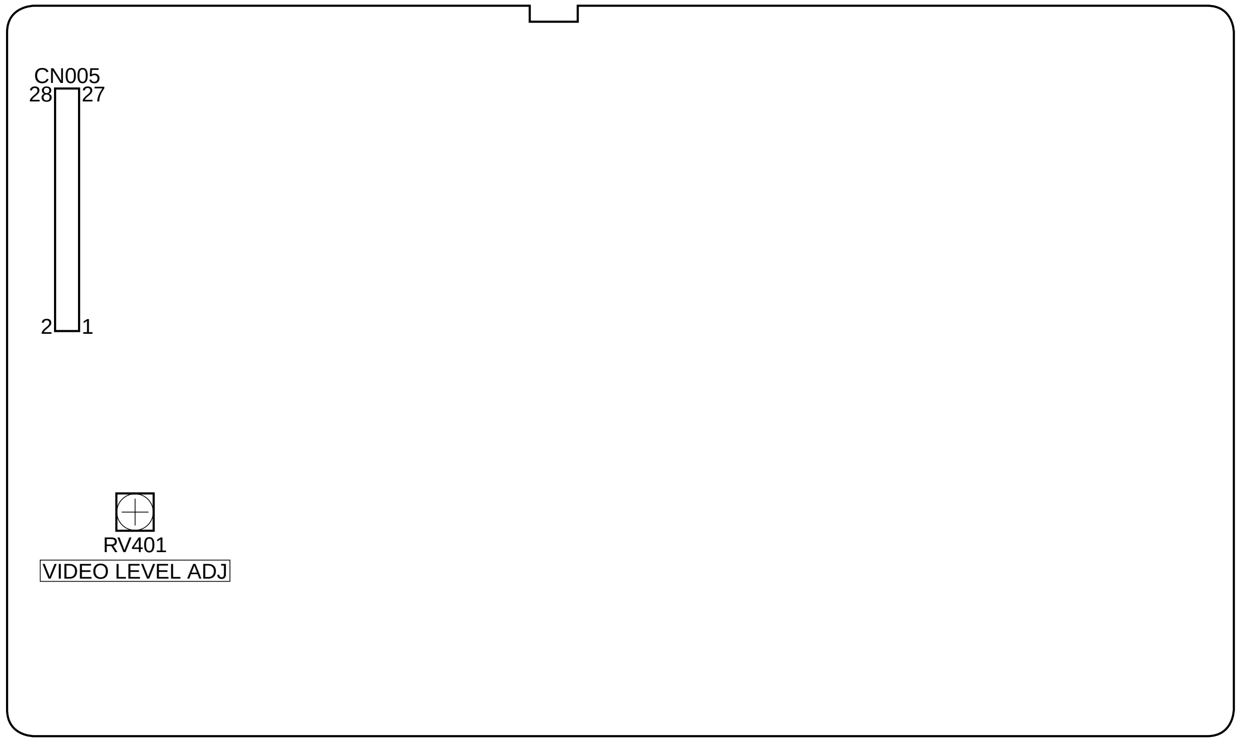
Checking method:

1) Confirm that the S-C burst is 286 ± 50 mVp-p.

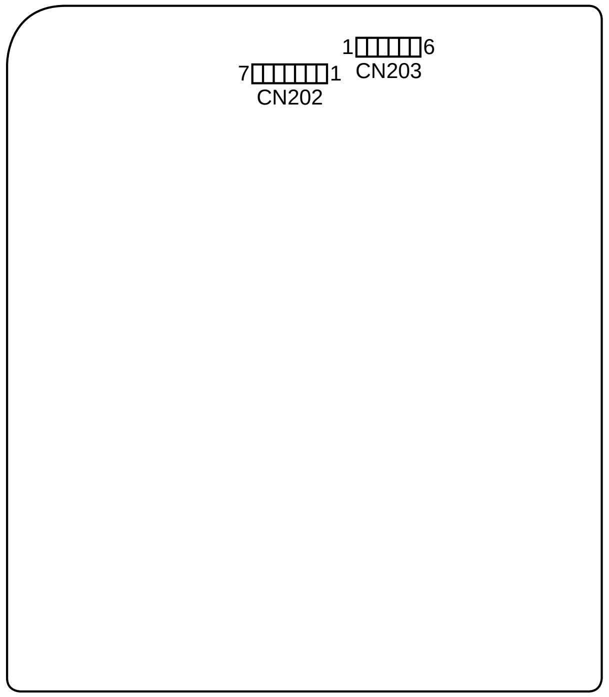
Figure 7-6

7-3. ADJUSTMENT RELATED PARTS ARRANGEMENT

MB-82 BOARD (SIDE A)



HS-030SH/030SU BOARD (SIDE A)



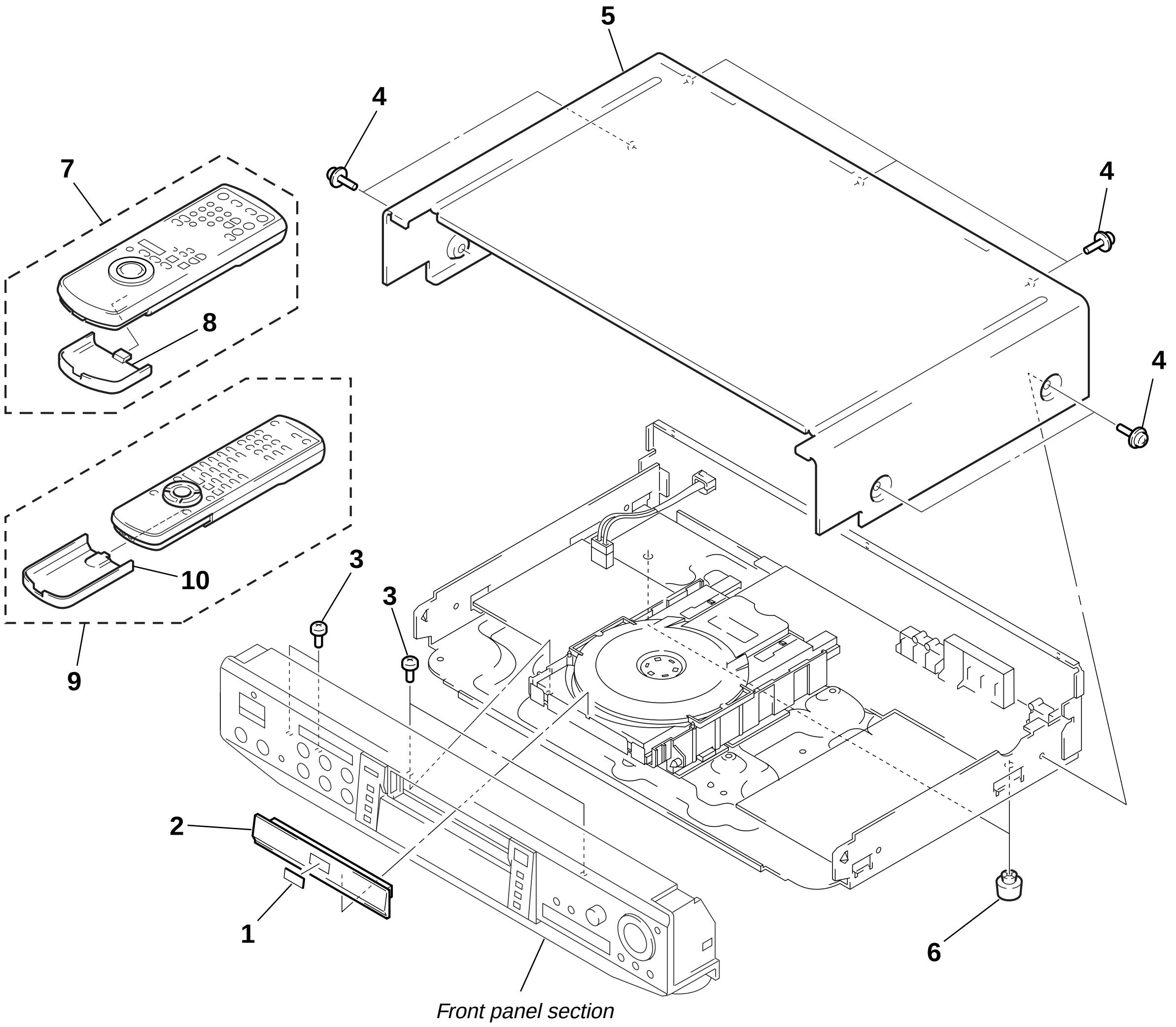
SECTION 8
REPAIR PARTS LIST

8-1. EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

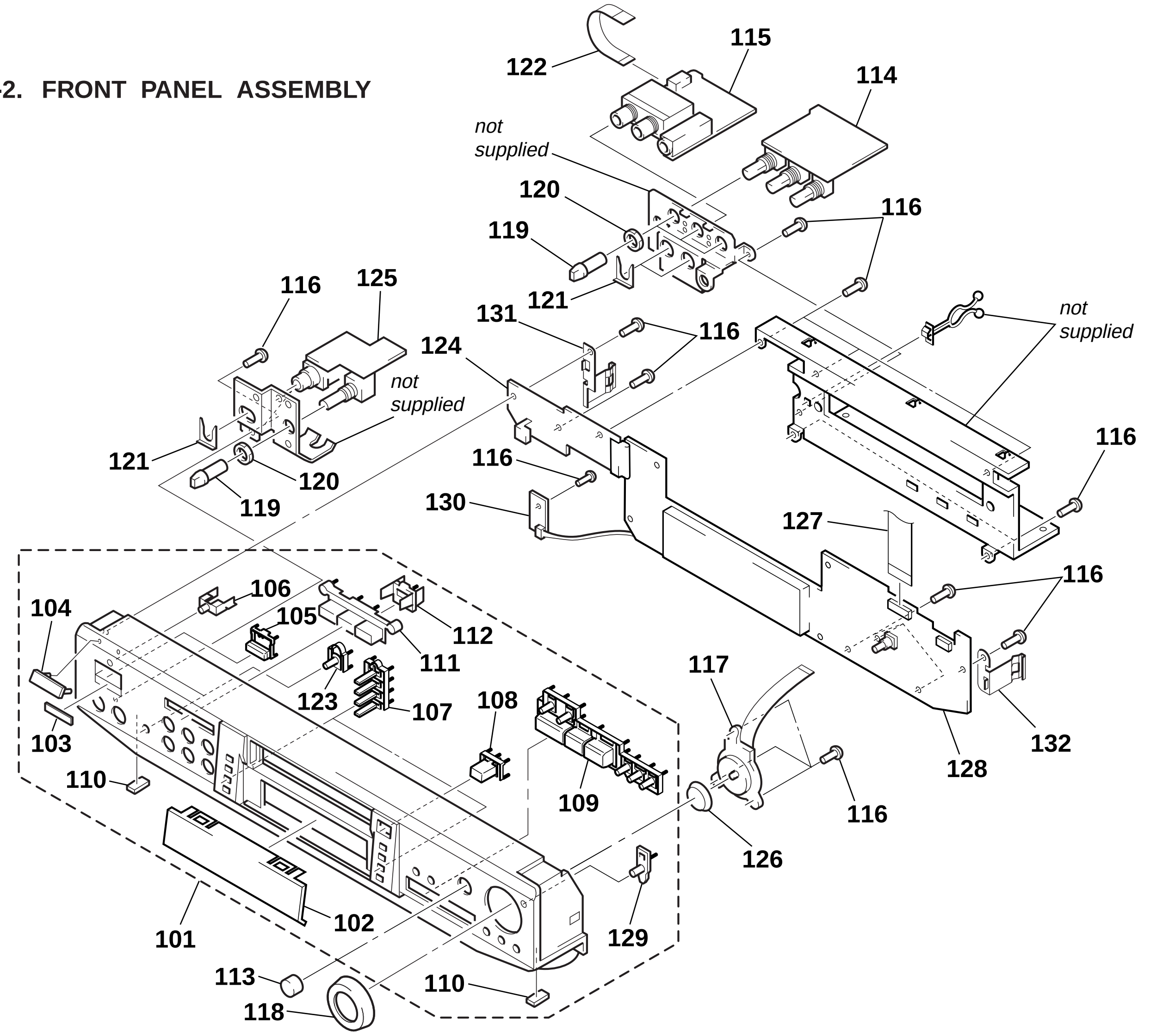
8-1-1. CASE ASSEMBLY



Front panel section

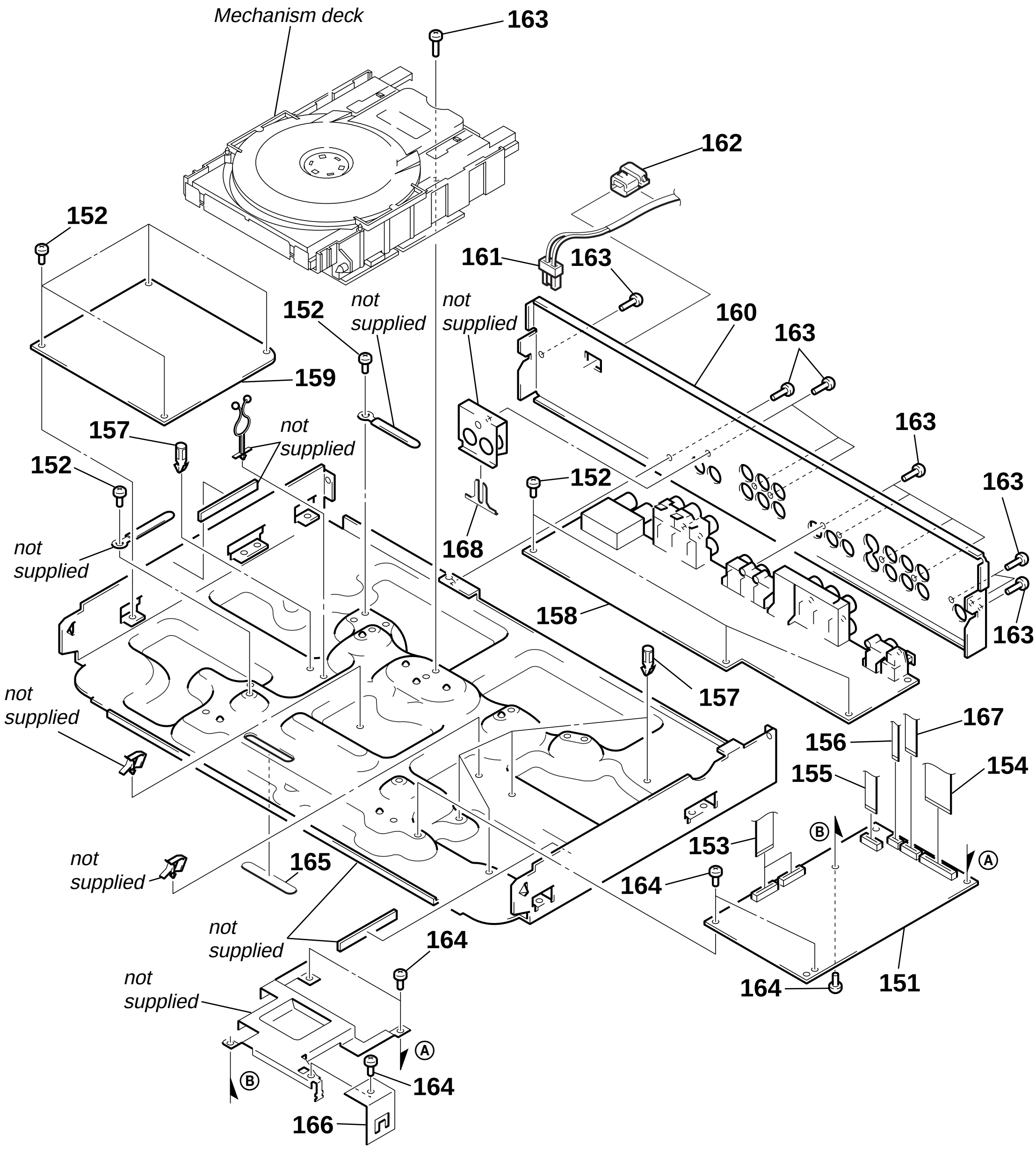
Ref. No.	Part No.	Description	Remark
1	3-975-726-61	EMBLEM, DVD (Singapore)	
1	3-975-726-81	EMBLEM, DVD (EXCEPT Singapore)	
2	3-053-498-11	COVER (BK), TRAY (Hong Kong, Chinese)	
2	3-053-498-21	COVER (BK), TRAY (Singapore)	
2	3-053-498-51	COVER (BK), TRAY (Taiwan)	
3	3-970-608-01	SUMITITE (B3), +BV	
4	3-710-901-41	SCREW, TAPPING (Singapore)	
4	3-710-901-51	SCREW, TAPPING (EXCEPT Singapore)	
5	3-055-503-11	CASE (M), TOP (Hong Kong, Chinese)	
5	3-055-503-21	CASE (M), TOP (Singapore)	
5	3-055-503-31	CASE (M), TOP (Taiwan)	
6	3-973-973-01	FOOT (S)	
7	1-418-321-61	COMMANDER, STANDARD (RMT-D111E/N) (EXCEPT Singapore)	
7	1-418-321-71	COMMANDER, STANDARD (RMT-D111E/H) (Singapore)	
8	3-055-539-01	COVER, BATTERY (for RMT-D111E)	
9	1-418-320-61	COMMANDER, STANDARD (RMT-D110E)	
10	3-053-633-01	COVER, BATTERY (for RMT-D110E)	

8-1-2. FRONT PANEL ASSEMBLY



Ref. No.	Part No.	Description	Remark
101	X-3949-443-1	PANEL ASSY, FRONT (Hong Kong, Chinese)	
101	X-3949-444-1	PANEL ASSY, FRONT (Singapore)	
101	X-3949-823-1	PANEL ASSY, FRONT (Taiwan)	
102	3-054-221-01	WINDOW (FL)	
103	3-974-997-41	WINDOW, REMOTE CONTROL (EXCEPT Singapore)	
103	3-974-997-51	WINDOW, REMOTE CONTROL (Singapore)	
104	4-217-485-01	EMBLEM (5-A), SONY (Singapore)	
104	4-963-404-41	EMBLEM (5-A), SONY (EXCEPT Singapore)	
105	3-053-954-11	BUTTON, POWER (Singapore)	
105	3-053-954-21	BUTTON, POWER (EXCEPT Singapore)	
106	3-053-955-01	INDICATOR, POWER	
107	X-3949-439-1	BUTTON (VOCAL) ASSY (EXCEPT Singapore)	
107	X-3949-440-1	BUTTON (VOCAL) ASSY (Singapore)	
108	3-054-651-11	BUTTON (OPEN) (EXCEPT Singapore)	
108	3-054-651-21	BUTTON (OPEN) (Singapore)	
109	3-054-220-11	BUTTON (PLAY) (EXCEPT Singapore)	
109	3-054-220-21	BUTTON (PLAY) (Singapore)	
110	3-053-504-11	CUSHION	
111	3-054-223-01	BUTTON (KEY CON C)	
112	3-054-215-01	PLATE, SHIELD	
113	3-053-482-11	KNOB (ACS) (Hong Kong, Chinese)	
113	3-053-482-21	KNOB (ACS) (Singapore)	
113	3-053-482-31	KNOB (ACS) (Taiwan)	
* 114	A-6065-343-A	VR-70 BOARD, COMPLETE (Taiwan)	
* 114	A-6065-349-A	VR-70 BOARD, COMPLETE (EXCEPT Taiwan)	
* 115	A-6065-342-A	MC-120 BOARD, COMPLETE (Taiwan)	
* 115	A-6065-348-A	MC-120 BOARD, COMPLETE (EXCEPT Taiwan)	
116	4-951-620-01	SCREW (2.6X8), +BVTP	
117	1-418-097-11	ENCODER, ROTARY	
118	X-3949-312-1	RING ASSY, SHUTTLE (Taiwan)	
118	X-3949-509-1	RING ASSY, SHUTTLE (Hong Kong, Chinese)	
118	X-3949-510-1	RING ASSY, SHUTTLE (Singapore)	
119	3-054-217-01	KNOB, VOLUME (Singapore)	
119	3-054-217-11	KNOB, VOLUME (Hong Kong, Chinese)	
119	3-054-217-21	KNOB, VOLUME (Taiwan)	
120	2-118-268-01	NUT (M9), HEXAGON	
* 121	3-684-436-01	PLATE, MOUNT	
122	1-791-079-11	CABLE, FLEXIBLE FLAT (FVM-11)	
123	X-3949-525-1	BUTTON (VES) ASSY (EXCEPT Singapore)	
123	X-3949-526-1	BUTTON (VES) ASSY (Singapore)	
* 124	A-6065-341-A	FR-151 BOARD, COMPLETE (Taiwan)	
* 124	A-6065-347-A	FR-151 BOARD, COMPLETE (EXCEPT Taiwan)	
* 125	A-6065-344-A	HP-112 BOARD, COMPLETE (Taiwan)	
* 125	A-6065-350-A	HP-112 BOARD, COMPLETE (EXCEPT Taiwan)	
126	3-054-224-01	STICK, CURSOR (Hong Kong, Chinese)	
126	3-054-224-11	STICK, CURSOR (Singapore)	
126	3-054-224-21	STICK, CURSOR (Taiwan)	
127	1-790-167-11	CABLE, FLEXIBLE FLAT (FMF-35)	
* 128	A-6065-340-A	FL-102 BOARD, COMPLETE (Taiwan)	
* 128	A-6065-357-A	FL-102 BOARD, COMPLETE (EXCEPT Taiwan)	
129	3-054-218-01	BUTTON, JOG	
* 130	A-6065-345-A	SW-318 BOARD, COMPLETE (Taiwan)	
* 130	A-6065-351-A	SW-318 BOARD, COMPLETE (EXCEPT Taiwan)	
131	3-054-216-01	PLATE (SL), GROUND	
132	3-053-512-01	PLATE (S), GROUND	

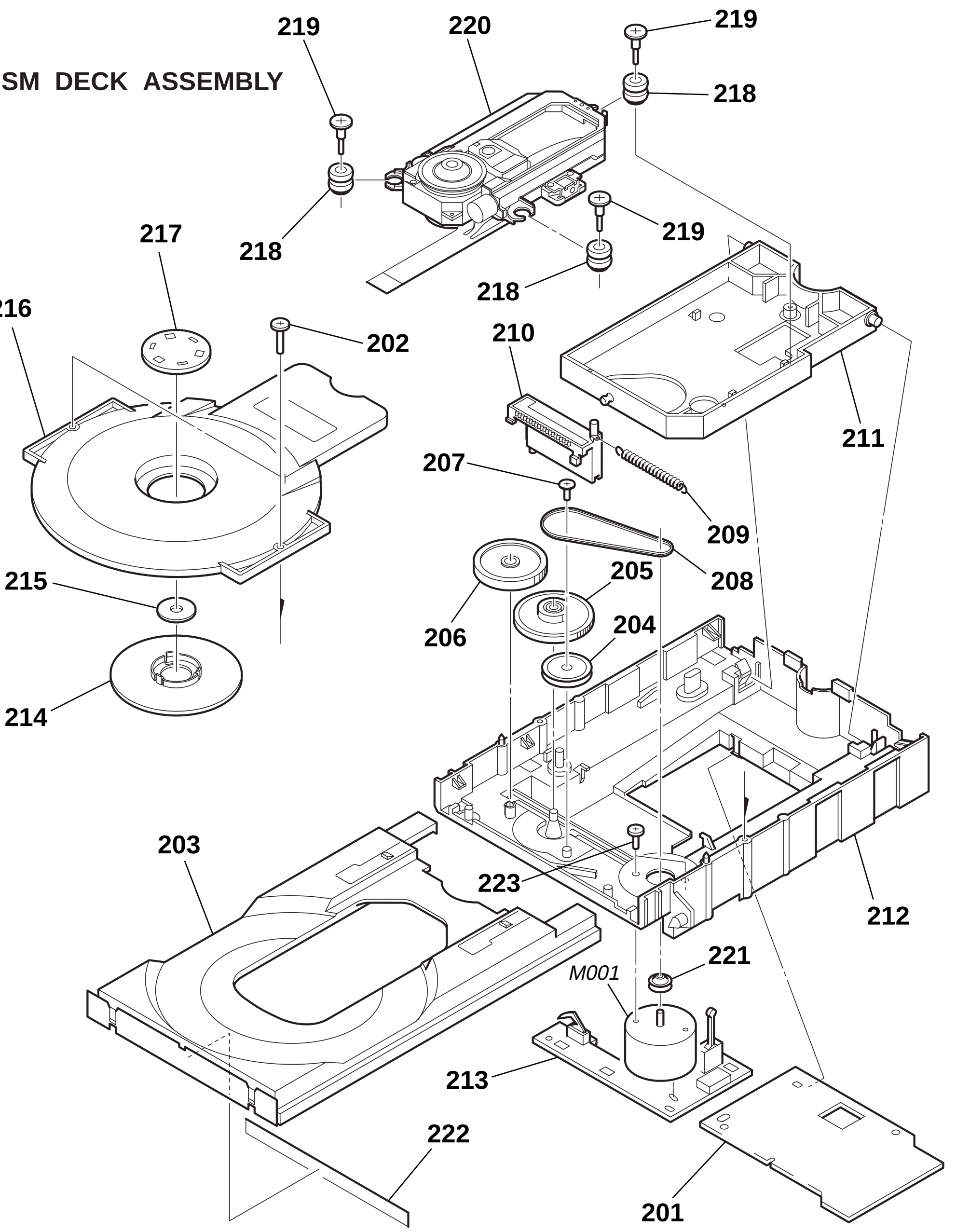
8-1-3. CHASSIS ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 151	A-6065-339-A	MB-82 BOARD, COMPLETE (Taiwan)	
* 151	A-6065-353-A	MB-82 BOARD, COMPLETE (Chinese)	
* 151	A-6065-354-A	MB-82 BOARD, COMPLETE (Singapore, Hong Kong)	
152	3-970-608-01	SUMITITE (B3), +BV	
153	1-790-166-11	CABLE, FLEXIBLE FLAT (FMT-25)	
154	1-790-163-11	CABLE, FLEXIBLE FLAT (FMA-7)	
155	1-790-169-11	CABLE, FLEXIBLE FLAT (FMA-10)	
156	1-790-165-11	CABLE, FLEXIBLE FLAT (FMA-9)	
* 157	3-669-610-11	SPACER	
* 158	A-6065-338-A	AU-213 BOARD, COMPLETE (Taiwan)	
* 158	A-6065-352-A	AU-213 BOARD, COMPLETE (EXCEPT Taiwan)	
* 159	1-468-359-11	POWER BLOCK (HS-030SH) (EXCEPT Taiwan)	
* 159	1-468-359-31	POWER BLOCK (HS-030SU) (Taiwan)	
160	3-053-507-41	PANEL, REAR (Taiwan)	
160	3-053-507-51	PANEL, REAR (EXCEPT Taiwan)	
⚠161	1-769-744-91	CORD, POWER (Singapore, Hong Kong)	
⚠161	1-782-510-11	CORD, POWER (Chinese)	
⚠161	1-790-390-41	CORD, POWER (Taiwan)	
162	4-966-267-11	BUSHING (FBS001), CORD	
163	3-970-608-51	SUMITITE (B3), +BV	
164	3-055-791-01	SUMITITE (B3) (RING), +BV	
165	3-055-418-01	COVER, EJECT (EXCEPT Taiwan)	
165	3-055-418-11	COVER, EJECT (Taiwan)	
166	3-054-650-01	SPRING, EMC	
167	1-790-164-11	CABLE, FLEXIBLE FLAT (FMA-8)	
168	3-955-377-01	PLATE (2GANG), MOUNT	

8-1-4. MECHANISM DECK ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 201	A-6065-275-A	TK-51 BOARD, COMPLETE (EXCEPT Taiwan)	
* 201	A-6065-289-A	TK-51 BOARD, COMPLETE (Taiwan)	
202	7-685-136-19	SCREW +BTP 2.6X12 TYPE2 N-S	
203	3-053-837-11	TRAY	
204	3-053-841-01	PULLEY GEAR (Taiwan)	
204	3-053-841-01	PULLEY GEAR (EXCEPT Taiwan)	
205	3-053-840-01	CAM DRIVING GEAR (Taiwan)	
205	3-053-840-01	CAM DRIVING GEAR (EXCEPT Taiwan)	
206	3-053-839-01	TRAY DRIVING GEAR	
207	4-974-711-01	SCREW (2X5) (P TYIGHT), (+) PTTWH	
208	3-053-842-01	BELT	
209	3-053-849-01	SPRING, TENSION	
210	3-053-838-01	CHUCK CAM (Taiwan)	
210	3-053-838-01	CHUCK CAM (EXCEPT Taiwan)	
211	3-053-836-01	BASE UNIT HOLDER (Taiwan)	
211	3-053-836-11	BASE UNIT HOLDER (EXCEPT Taiwan)	
212	3-053-835-01	BASE, LOADING (Taiwan)	
212	3-053-835-11	BASE, LOADING (EXCEPT Taiwan)	
* 213	A-6066-013-A	MS-46 BOARD, COMPLETE (EXCEPT Taiwan)	
* 213	A-6066-012-A	MS-29 BOARD, COMPLETE (Taiwan)	
214	3-053-845-01	CHUCK PLATE (Taiwan)	
214	3-053-845-21	CHUCK PLATE (EXCEPT Taiwan)	
215	3-053-844-01	YOKE (Taiwan)	
215	3-053-844-21	YOKE (EXCEPT Taiwan)	
216	3-053-848-01	CHUCK HOLDER (Taiwan)	
216	3-053-848-11	CHUCK HOLDER (EXCEPT Taiwan)	
217	3-053-846-01	YOKE HOLDER (Taiwan)	
217	3-053-846-11	YOKE HOLDER (EXCEPT Taiwan)	
218	3-053-847-01	INSULATOR	
219	4-981-923-01	SCREW (M), STEP	
⚠220	8-820-081-03	OPTICAL PICK-UP KHM-220AAA/J1RP	
221	3-053-843-01	MOTOR PULLEY (Taiwan)	
221	3-053-843-01	MOTOR PULLEY (EXCEPT Taiwan)	
222	3-055-097-01	SEAL, TRAY DUST	
223	7-621-775-10	SCREW +B 2.6X4	
M001	1-541-632-11	MOTOR, DC (LOADING)	

8-2. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA. . : μA. . uPA. . : μPA. .
  uPB. . : μPB. . uPC. . : μPC. .
  uPD. . : μPD. .
- CAPACITORS
  uF: μF
- COILS
  uH: μH
- Not all of the parts for POWER BLOCK (HS-030SH/030SU) are listed.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-6065-338-A	AU-213 BOARD, COMPLETE (Taiwan)			
*	A-6065-352-A	AU-213 BOARD, COMPLETE (EXCEPT Taiwan)			
	************************************				
		(Ref.No. 2,000 Series)			
		< CAPACITOR >			
C302	1-126-926-11	ELECT	1000uF	20%	10V
C303	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C304	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C305	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C306	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C307	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C308	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C309	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C310	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C311	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C312	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C313	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C314	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C315	1-126-935-11	ELECT	470uF	20%	6.3V
C316	1-104-665-11	ELECT	100uF	20%	10V
C317	1-126-935-11	ELECT	470uF	20%	6.3V
C318	1-104-665-11	ELECT	100uF	20%	10V
C319	1-126-935-11	ELECT	470uF	20%	6.3V
C320	1-104-665-11	ELECT	100uF	20%	10V
C321	1-104-665-11	ELECT	100uF	20%	10V
C322	1-104-665-11	ELECT	100uF	20%	10V
C323	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C324	1-126-935-11	ELECT	470uF	20%	6.3V
C325	1-126-935-11	ELECT	470uF	20%	6.3V
C326	1-104-664-11	ELECT	47uF	20%	16V
C327	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C328	1-104-664-11	ELECT	47uF	20%	16V
C329	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C331	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C332	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C334	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C335	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C336	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C343	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C344	1-126-960-11	ELECT	1uF	20%	50V
C345	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C346	1-104-664-11	ELECT	47uF	20%	16V
C354	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C361	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C362	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C363	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C364	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C365	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C366	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C367	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C368	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C401	1-104-665-11	ELECT	100uF	20%	25V
C404	1-104-665-11	ELECT	100uF	20%	25V
C405	1-124-589-11	ELECT	47uF	20%	16V
C406	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C407	1-124-589-11	ELECT	47uF	20%	16V
C408	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C409	1-104-664-11	ELECT	47uF	20%	16V
C410	1-104-664-11	ELECT	47uF	20%	16V
C411	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C412	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C413	1-104-664-11	ELECT	47uF	20%	16V
C414	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C415	1-104-664-11	ELECT	47uF	20%	16V
C416	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C417	1-104-664-11	ELECT	47uF	20%	16V
C418	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C419	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C420	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C421	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C431	1-124-589-11	ELECT	47uF	20%	16V
C432	1-124-589-11	ELECT	47uF	20%	16V
C433	1-104-665-11	ELECT	100uF	20%	25V
C434	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C435	1-104-665-11	ELECT	100uF	20%	25V
C436	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C437	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C438	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C439	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C440	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C442	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C443	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C447	1-136-850-11	FILM	0.1uF	5%	63V
C448	1-104-664-11	ELECT	47uF	20%	16V
C449	1-104-664-11	ELECT	47uF	20%	16V

Ref. No.	Part No.	Description			Remark
C450	1-136-850-11	FILM	0.1uF	5%	63V
C501	1-104-664-11	ELECT	47uF	20%	16V
C502	1-104-664-11	ELECT	47uF	20%	16V
C503	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C504	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C505	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C506	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C507	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C508	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C509	1-136-850-11	FILM	0.1uF	5%	63V
C512	1-136-850-11	FILM	0.1uF	5%	63V
C513	1-104-664-11	ELECT	47uF	20%	16V
C514	1-104-664-11	ELECT	47uF	20%	16V
C521	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C522	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C523	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C524	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C525	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C526	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C541	1-104-664-11	ELECT	47uF	20%	16V
C542	1-104-664-11	ELECT	47uF	20%	16V
C543	1-163-130-00	CERAMIC CHIP	360PF	5%	50V
C544	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C545	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C546	1-163-130-00	CERAMIC CHIP	360PF	5%	50V
C547	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C548	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C549	1-104-664-11	ELECT	47uF	20%	16V
C550	1-104-664-11	ELECT	47uF	20%	16V
C571	1-104-664-11	ELECT	47uF	20%	16V
C572	1-104-664-11	ELECT	47uF	20%	16V
C573	1-163-130-00	CERAMIC CHIP	360PF	5%	50V
C574	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
C575	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C576	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C577	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C578	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C579	1-104-664-11	ELECT	47uF	20%	16V
C580	1-104-664-11	ELECT	47uF	20%	16V
C581	1-126-934-11	ELECT	220uF	20%	16V
C582	1-126-934-11	ELECT	220uF	20%	16V
C583	1-126-934-11	ELECT	220uF	20%	16V
C584	1-126-934-11	ELECT	220uF	20%	16V
C602	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C604	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C605	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C606	1-104-664-11	ELECT	47uF	20%	16V
C607	1-128-551-11	ELECT	22uF	20%	25V
C608	1-128-551-11	ELECT	22uF	20%	25V
C609	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C610	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C611	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C612	1-124-257-00	ELECT	2.2uF	20%	50V
C613	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C614	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C615	1-124-257-00	ELECT	2.2uF	20%	50V
C616	1-124-589-11	ELECT	47uF	20%	16V
C617	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C618	1-104-664-11	ELECT	47uF	20%	16V
C619	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V

Ref. No.	Part No.	Description			Remark
C620	1-126-964-11	ELECT	10uF	20%	50V
C621	1-104-664-11	ELECT	47uF	20%	16V
C622	1-126-964-11	ELECT	10uF	20%	50V
C623	1-126-963-11	ELECT	4.7uF	20%	50V
C624	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C625	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C626	1-104-665-11	ELECT	100uF	20%	10V
C627	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C628	1-128-551-11	ELECT	22uF	20%	25V
C629	1-104-664-11	ELECT	47uF	20%	16V
C630	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C631	1-126-963-11	ELECT	4.7uF	20%	50V
C632	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C633	1-126-963-11	ELECT	4.7uF	20%	50V
C634	1-128-551-11	ELECT	22uF	20%	25V
C635	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C636	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C637	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C638	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C640	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C641	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C642	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C643	1-104-664-11	ELECT	47uF	20%	25V
C644	1-104-664-11	ELECT	47uF	20%	25V
C648	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C651	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C652	1-104-664-11	ELECT	47uF	20%	25V
		< CONNECTOR >			
CN301	1-785-698-11	CONNECTOR, FFC/FPC 28P			
CN302	1-785-695-11	CONNECTOR, FFC/FPC 13P			
CN303	1-785-694-11	CONNECTOR, FFC/FPC 7P			
* CN304	1-568-935-11	PIN, CONNECTOR 8P			
CN401	1-506-468-11	PIN, CONNECTOR 3P			
* CN601	1-568-937-11	PIN, CONNECTOR 10P			
CN602	1-785-696-11	CONNECTOR, FFC/FPC 15P			
		< DIODE >			
D301	8-719-988-61	DIODE 1SS355TE-17			
D304	8-719-067-59	DIODE MAZ9120D0LS0-TX/L			
D305	8-719-067-59	DIODE MAZ9120D0LS0-TX/L			
D306	8-719-067-59	DIODE MAZ9120D0LS0-TX/L			
D307	8-719-067-59	DIODE MAZ9120D0LS0-TX/L			
D308	8-719-988-61	DIODE 1SS355TE-17			
D310	8-719-988-61	DIODE 1SS355TE-17			
D311	8-719-988-61	DIODE 1SS355TE-17			
D312	8-719-988-61	DIODE 1SS355TE-17			
D313	8-719-988-61	DIODE 1SS355TE-17			
D314	8-719-988-61	DIODE 1SS355TE-17			
D315	8-719-988-61	DIODE 1SS355TE-17			
D316	8-719-988-61	DIODE 1SS355TE-17			
D501	8-719-988-61	DIODE 1SS355TE-17			
D502	8-719-988-61	DIODE 1SS355TE-17			
D503	8-719-988-61	DIODE 1SS355TE-17			
D504	8-719-988-61	DIODE 1SS355TE-17			
D505	8-719-988-61	DIODE 1SS355TE-17			
D506	8-719-988-61	DIODE 1SS355TE-17			
D507	8-719-988-61	DIODE 1SS355TE-17			
D508	8-719-988-61	DIODE 1SS355TE-17			
D592	8-719-988-61	DIODE 1SS355TE-17			

Ref. No.	Part No.	Description	Remark
D601	8-719-056-82	DIODE UDZ-TE-17-6.2B	
D602	8-719-056-82	DIODE UDZ-TE-17-6.2B	
D603	8-719-800-76	DIODE 1SS226	
D604	8-719-800-76	DIODE 1SS226	
D605	8-719-988-61	DIODE 1SS355TE-17	
D606	8-719-988-61	DIODE 1SS355TE-17	
		< EARTH TERMINAL >	
* ET301	1-537-738-21	TERMINAL, EARTH	
* ET302	1-537-738-21	TERMINAL, EARTH	
* ET303	1-537-738-21	TERMINAL, EARTH	
		< FERRITE BEAD >	
FB305	1-414-553-11	FERRITE 0uH	
FB306	1-414-553-11	FERRITE 0uH	
FB307	1-414-553-11	FERRITE 0uH	
FB308	1-414-553-11	FERRITE 0uH	
FB310	1-414-553-11	FERRITE 0uH	
FB311	1-414-553-11	FERRITE 0uH	
FB312	1-414-553-11	FERRITE 0uH	
FB313	1-414-553-11	FERRITE 0uH	
FB314	1-414-553-11	FERRITE 0uH	
FB315	1-414-553-11	FERRITE 0uH	
FB316	1-414-553-11	FERRITE 0uH	
FB317	1-414-553-11	FERRITE 0uH	
FB318	1-414-553-11	FERRITE 0uH	
FB319	1-414-553-11	FERRITE 0uH	
FB320	1-414-553-11	FERRITE 0uH	
FB321	1-414-553-11	FERRITE 0uH	
FB322	1-414-553-11	FERRITE 0uH	
FB341	1-414-135-11	FERRITE 0uH	
FB342	1-414-553-11	FERRITE 0uH	
FB401	1-414-553-11	FERRITE 0uH	
FB402	1-414-553-11	FERRITE 0uH	
FB403	1-414-553-11	FERRITE 0uH	
FB404	1-414-553-11	FERRITE 0uH	
FB405	1-414-553-11	FERRITE 0uH	
FB406	1-414-553-11	FERRITE 0uH	
FB407	1-414-553-11	FERRITE 0uH	
FB408	1-414-553-11	FERRITE 0uH	
FB409	1-414-553-11	FERRITE 0uH	
FB601	1-414-135-11	FERRITE 0uH	
FB602	1-414-135-11	FERRITE 0uH	
FB603	1-414-135-11	FERRITE 0uH	
FB604	1-414-135-11	FERRITE 0uH	
FB605	1-414-135-11	FERRITE 0uH	
FB606	1-414-135-11	FERRITE 0uH	
FB607	1-414-135-11	FERRITE 0uH	
FB608	1-414-135-11	FERRITE 0uH	
FB609	1-414-135-11	FERRITE 0uH	
FB610	1-414-135-11	FERRITE 0uH	
FB611	1-414-135-11	FERRITE 0uH	
FB612	1-414-135-11	FERRITE 0uH	
		< IC >	
IC301	8-759-701-58	IC NJM78M08FA	
IC302	8-759-982-54	IC RC79M09FA	
IC303	8-759-563-79	IC BA7660F-E2	
IC321	8-759-563-79	IC BA7660F-E2	
IC401	8-759-909-71	IC BA4558F	

Ref. No.	Part No.	Description	Remark
IC431	8-759-909-71	IC BA4558F	
IC432	8-759-909-71	IC BA4558F	
IC502	8-759-909-71	IC BA4558F	
IC503	8-759-909-71	IC BA4558F	
IC505	8-749-921-12	IC GP1F32T	
IC541	8-759-909-71	IC BA4558F	
IC542	8-759-909-71	IC BA4558F	
IC571	8-759-909-71	IC BA4558F	
IC572	8-759-909-71	IC BA4558F	
IC601	8-759-909-71	IC BA4558F	
IC602	8-759-369-74	IC NJM4556AM-TE2	
IC603	8-759-363-77	IC MSM6654A-454GS-KDR1	
IC604	8-759-701-51	IC NJM2072M	
IC605	8-759-909-71	IC BA4558F	
IC606	8-759-909-71	IC BA4558F	
		< JACK >	
J303	1-793-445-11	JACK, PIN 3P (COMPONENT VIDEO OUT)	
J502	1-793-446-21	JACK, PIN 1P (COAXIAL)	
J505	1-785-535-11	JACK BLOCK, PIN (LINE OUT/S VIDEO OUT)	
J508	1-785-536-11	JACK, PIN (6P) (5.1CH OUTPUT)	
J601	1-563-988-21	JACK, LARGE TYPE 2P (MIC 3/MIC 4)	
		< COIL >	
L301	1-412-953-11	INDUCTOR 15uH	
L302	1-412-953-11	INDUCTOR 15uH	
L303	1-412-953-11	INDUCTOR 15uH	
L304	1-412-953-11	INDUCTOR 15uH	
L305	1-412-953-11	INDUCTOR 15uH	
L306	1-412-953-11	INDUCTOR 15uH	
L307	1-412-963-11	INDUCTOR 100uH	
L321	1-412-963-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q301	8-729-424-08	TRANSISTOR UN2111	
Q303	8-729-216-22	TRANSISTOR 2SA1162	
Q304	8-729-421-19	TRANSISTOR UN2213	
Q305	8-729-424-08	TRANSISTOR UN2111	
Q306	8-729-424-08	TRANSISTOR UN2111	
Q307	8-729-424-08	TRANSISTOR UN2111	
Q308	8-729-424-08	TRANSISTOR UN2111	
Q309	8-729-424-08	TRANSISTOR UN2111	
Q310	8-729-424-08	TRANSISTOR UN2111	
Q311	8-729-424-08	TRANSISTOR UN2111	
Q314	8-729-424-08	TRANSISTOR UN2111	
Q315	8-729-421-19	TRANSISTOR UN2213	
Q321	8-729-421-19	TRANSISTOR UN2213	
Q322	8-729-424-08	TRANSISTOR UN2111	
Q341	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q401	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q402	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q403	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q404	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q405	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q406	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q407	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q408	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q409	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q431	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q432	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q435	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	

Ref. No.	Part No.	Description			Remark
Q436	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q503	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q504	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q543	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q544	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q573	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q574	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q601	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q602	8-729-421-22	TRANSISTOR	UN2211		
Q603	8-729-424-08	TRANSISTOR	UN2111		
Q604	8-729-046-97	TRANSISTOR	2SD1938 (F)-T (TX).SO		
Q606	8-729-216-22	TRANSISTOR	2SA1162		
Q607	8-729-216-22	TRANSISTOR	2SA1162		
Q608	8-729-216-22	TRANSISTOR	2SA1162		
Q609	8-729-216-22	TRANSISTOR	2SA1162		
		< RESISTOR >			
R301	1-216-042-00	METAL CHIP	510	5%	1/10W
R302	1-216-042-00	METAL CHIP	510	5%	1/10W
R303	1-216-042-00	METAL CHIP	510	5%	1/10W
R304	1-216-021-00	METAL CHIP	68	5%	1/10W
R305	1-216-073-00	METAL CHIP	10K	5%	1/10W
R306	1-216-021-00	METAL CHIP	68	5%	1/10W
R307	1-216-073-00	METAL CHIP	10K	5%	1/10W
R308	1-216-021-00	METAL CHIP	68	5%	1/10W
R309	1-216-097-91	RES, CHIP	100K	5%	1/10W
R310	1-216-042-00	METAL CHIP	510	5%	1/10W
R311	1-216-042-00	METAL CHIP	510	5%	1/10W
R312	1-216-042-00	METAL CHIP	510	5%	1/10W
R313	1-216-097-91	RES, CHIP	100K	5%	1/10W
R314	1-216-097-91	RES, CHIP	100K	5%	1/10W
R315	1-216-097-91	RES, CHIP	100K	5%	1/10W
R316	1-216-097-91	RES, CHIP	100K	5%	1/10W
R317	1-216-073-00	METAL CHIP	10K	5%	1/10W
R318	1-216-097-91	RES, CHIP	100K	5%	1/10W
R319	1-216-097-91	RES, CHIP	100K	5%	1/10W
R320	1-216-097-91	RES, CHIP	100K	5%	1/10W
R321	1-216-073-00	METAL CHIP	10K	5%	1/10W
R322	1-216-073-00	METAL CHIP	10K	5%	1/10W
R323	1-216-021-00	METAL CHIP	68	5%	1/10W
R324	1-216-021-00	METAL CHIP	68	5%	1/10W
R325	1-216-021-00	METAL CHIP	68	5%	1/10W
R326	1-216-021-00	METAL CHIP	68	5%	1/10W
R327	1-216-021-00	METAL CHIP	68	5%	1/10W
R328	1-216-021-00	METAL CHIP	68	5%	1/10W
R330	1-216-073-00	METAL CHIP	10K	5%	1/10W
R333	1-216-049-91	RES, CHIP	1K	5%	1/10W
R334	1-216-097-91	RES, CHIP	100K	5%	1/10W
R341	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R342	1-216-063-91	RES, CHIP	3.9K	5%	1/10W
R343	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R344	1-216-033-00	METAL CHIP	220	5%	1/10W
R345	1-216-021-00	METAL CHIP	68	5%	1/10W
R346	1-216-025-91	RES, CHIP	100	5%	1/10W
R347	1-216-295-91	SHORT	0		
R349	1-216-295-91	SHORT	0		
R350	1-216-295-91	SHORT	0		
R353	1-216-295-91	SHORT	0		
R354	1-216-295-91	SHORT	0		
R357	1-216-295-91	SHORT	0		
R358	1-216-295-91	SHORT	0		
R361	1-216-295-91	SHORT	0		
R362	1-216-097-91	RES, CHIP	100K	5%	1/10W
R401	1-216-085-00	METAL CHIP	33K	5%	1/10W
R402	1-216-085-00	METAL CHIP	33K	5%	1/10W
R403	1-216-085-00	METAL CHIP	33K	5%	1/10W
R404	1-216-085-00	METAL CHIP	33K	5%	1/10W
R405	1-216-085-00	METAL CHIP	33K	5%	1/10W
R406	1-216-077-91	RES, CHIP	15K	5%	1/10W
R407	1-216-077-91	RES, CHIP	15K	5%	1/10W
R408	1-216-085-00	METAL CHIP	33K	5%	1/10W
R409	1-216-025-91	RES, CHIP	100	5%	1/10W
R410	1-216-025-91	RES, CHIP	100	5%	1/10W
R411	1-216-049-91	RES, CHIP	1K	5%	1/10W
R412	1-216-049-91	RES, CHIP	1K	5%	1/10W
R413	1-216-089-91	RES, CHIP	47K	5%	1/10W
R414	1-216-025-91	RES, CHIP	100	5%	1/10W
R415	1-216-049-91	RES, CHIP	1K	5%	1/10W
R416	1-216-073-00	METAL CHIP	10K	5%	1/10W
R417	1-216-073-00	METAL CHIP	10K	5%	1/10W
R418	1-216-073-00	METAL CHIP	10K	5%	1/10W
R419	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R420	1-216-073-00	METAL CHIP	10K	5%	1/10W
R421	1-216-073-00	METAL CHIP	10K	5%	1/10W
R422	1-216-073-00	METAL CHIP	10K	5%	1/10W
R423	1-216-089-91	RES, CHIP	47K	5%	1/10W
R424	1-216-025-91	RES, CHIP	100	5%	1/10W
R425	1-216-049-91	RES, CHIP	1K	5%	1/10W
R426	1-216-073-00	METAL CHIP	10K	5%	1/10W
R427	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R428	1-216-073-00	METAL CHIP	10K	5%	1/10W
R429	1-216-089-91	RES, CHIP	47K	5%	1/10W
R430	1-216-025-91	RES, CHIP	100	5%	1/10W
R431	1-216-089-91	RES, CHIP	47K	5%	1/10W
R432	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R433	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R434	1-216-089-91	RES, CHIP	47K	5%	1/10W
R435	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R436	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R437	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R438	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R439	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R440	1-216-295-91	SHORT	0		
R441	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R442	1-216-049-91	RES, CHIP	1K	5%	1/10W
R443	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R444	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R445	1-216-049-91	RES, CHIP	1K	5%	1/10W
R446	1-216-047-91	RES, CHIP	820	5%	1/10W
R447	1-216-049-91	RES, CHIP	1K	5%	1/10W
R448	1-216-047-91	RES, CHIP	820	5%	1/10W
R449	1-216-109-00	METAL CHIP	330K	5%	1/10W
R450	1-216-109-00	METAL CHIP	330K	5%	1/10W
R451	1-216-041-00	METAL CHIP	470	5%	1/10W
R452	1-216-041-00	METAL CHIP	470	5%	1/10W
R453	1-216-073-00	METAL CHIP	10K	5%	1/10W
R454	1-216-073-00	METAL CHIP	10K	5%	1/10W
R456	1-216-049-91	RES, CHIP	1K	5%	1/10W
R457	1-216-049-91	RES, CHIP	1K	5%	1/10W
R458	1-216-041-00	METAL CHIP	470	5%	1/10W

Ref. No.	Part No.	Description			Remark
R459	1-216-041-00	METAL CHIP	470	5%	1/10W
R460	1-216-041-00	METAL CHIP	470	5%	1/10W
R461	1-216-041-00	METAL CHIP	470	5%	1/10W
R466	1-216-073-00	METAL CHIP	10K	5%	1/10W
R467	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R468	1-216-073-00	METAL CHIP	10K	5%	1/10W
R469	1-216-073-00	METAL CHIP	10K	5%	1/10W
R470	1-216-073-00	METAL CHIP	10K	5%	1/10W
R471	1-216-025-91	RES, CHIP	100	5%	1/10W
R472	1-216-089-91	RES, CHIP	47K	5%	1/10W
R473	1-216-049-91	RES, CHIP	1K	5%	1/10W
R474	1-216-073-00	METAL CHIP	10K	5%	1/10W
R475	1-216-073-00	METAL CHIP	10K	5%	1/10W
R476	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R477	1-216-089-91	RES, CHIP	47K	5%	1/10W
R478	1-216-025-91	RES, CHIP	100	5%	1/10W
R479	1-216-049-91	RES, CHIP	1K	5%	1/10W
R480	1-216-073-00	METAL CHIP	10K	5%	1/10W
R481	1-216-073-00	METAL CHIP	10K	5%	1/10W
R482	1-216-073-00	METAL CHIP	10K	5%	1/10W
R483	1-216-073-00	METAL CHIP	10K	5%	1/10W
R484	1-216-073-00	METAL CHIP	10K	5%	1/10W
R485	1-216-089-91	RES, CHIP	47K	5%	1/10W
R486	1-216-025-91	RES, CHIP	100	5%	1/10W
R487	1-216-049-91	RES, CHIP	1K	5%	1/10W
R488	1-216-073-00	METAL CHIP	10K	5%	1/10W
R489	1-216-073-00	METAL CHIP	10K	5%	1/10W
R490	1-216-073-00	METAL CHIP	10K	5%	1/10W
R491	1-216-089-91	RES, CHIP	47K	5%	1/10W
R492	1-216-025-91	RES, CHIP	100	5%	1/10W
R493	1-216-073-00	METAL CHIP	10K	5%	1/10W
R494	1-216-073-00	METAL CHIP	10K	5%	1/10W
R495	1-216-073-00	METAL CHIP	10K	5%	1/10W
R496	1-216-073-00	METAL CHIP	10K	5%	1/10W
R497	1-216-049-91	RES, CHIP	1K	5%	1/10W
R501	1-216-089-91	RES, CHIP	47K	5%	1/10W
R502	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R503	1-216-089-91	RES, CHIP	47K	5%	1/10W
R504	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R510	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R511	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R512	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R513	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R514	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R517	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R519	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R520	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R521	1-216-109-00	METAL CHIP	330K	5%	1/10W
R522	1-216-109-00	METAL CHIP	330K	5%	1/10W
R523	1-216-041-00	METAL CHIP	470	5%	1/10W
R524	1-216-041-00	METAL CHIP	470	5%	1/10W
R525	1-216-049-91	RES, CHIP	1K	5%	1/10W
R526	1-216-025-91	RES, CHIP	100	5%	1/10W
R527	1-216-025-91	RES, CHIP	100	5%	1/10W
R528	1-216-049-91	RES, CHIP	1K	5%	1/10W
R541	1-216-089-91	RES, CHIP	47K	5%	1/10W
R542	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R543	1-216-089-91	RES, CHIP	47K	5%	1/10W
R544	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R545	1-216-069-00	METAL CHIP	6.8K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R546	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R547	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R548	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R549	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R553	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R555	1-216-109-00	METAL CHIP	330K	5%	1/10W
R556	1-216-109-00	METAL CHIP	330K	5%	1/10W
R557	1-216-041-00	METAL CHIP	470	5%	1/10W
R558	1-216-041-00	METAL CHIP	470	5%	1/10W
R559	1-216-049-91	RES, CHIP	1K	5%	1/10W
R560	1-216-025-91	RES, CHIP	100	5%	1/10W
R561	1-216-025-91	RES, CHIP	100	5%	1/10W
R562	1-216-049-91	RES, CHIP	1K	5%	1/10W
R571	1-216-089-91	RES, CHIP	47K	5%	1/10W
R572	1-216-089-91	RES, CHIP	47K	5%	1/10W
R573	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R574	1-216-077-91	RES, CHIP	15K	5%	1/10W
R575	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R576	1-216-077-91	RES, CHIP	15K	5%	1/10W
R577	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R578	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R579	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R580	1-216-079-00	METAL CHIP	18K	5%	1/10W
R585	1-216-109-00	METAL CHIP	330K	5%	1/10W
R586	1-216-109-00	METAL CHIP	330K	5%	1/10W
R587	1-216-041-00	METAL CHIP	470	5%	1/10W
R588	1-216-041-00	METAL CHIP	470	5%	1/10W
R589	1-216-049-91	RES, CHIP	1K	5%	1/10W
R590	1-216-025-91	RES, CHIP	100	5%	1/10W
R591	1-216-025-91	RES, CHIP	100	5%	1/10W
R592	1-216-049-91	RES, CHIP	1K	5%	1/10W
R601	1-216-025-91	RES, CHIP	100	5%	1/10W
R602	1-216-025-91	RES, CHIP	100	5%	1/10W
R603	1-216-025-91	RES, CHIP	100	5%	1/10W
R604	1-216-049-91	RES, CHIP	1K	5%	1/10W
R605	1-216-073-00	METAL CHIP	10K	5%	1/10W
R606	1-216-097-91	RES, CHIP	100K	5%	1/10W
R607	1-216-073-00	METAL CHIP	10K	5%	1/10W
R608	1-216-073-00	METAL CHIP	10K	5%	1/10W
R609	1-216-073-00	METAL CHIP	10K	5%	1/10W
R610	1-216-097-91	RES, CHIP	100K	5%	1/10W
R611	1-216-097-91	RES, CHIP	100K	5%	1/10W
R612	1-216-097-91	RES, CHIP	100K	5%	1/10W
R613	1-216-097-91	RES, CHIP	100K	5%	1/10W
R614	1-216-049-91	RES, CHIP	1K	5%	1/10W
R615	1-216-089-91	RES, CHIP	47K	5%	1/10W
R616	1-216-049-91	RES, CHIP	1K	5%	1/10W
R617	1-216-089-91	RES, CHIP	47K	5%	1/10W
R618	1-216-109-00	METAL CHIP	330K	5%	1/10W
R619	1-216-073-00	METAL CHIP	10K	5%	1/10W
R620	1-216-025-91	RES, CHIP	100	5%	1/10W
R621	1-216-033-00	METAL CHIP	220	5%	1/10W
R622	1-216-047-91	RES, CHIP	820	5%	1/10W
R623	1-216-097-91	RES, CHIP	100K	5%	1/10W
R624	1-216-109-00	METAL CHIP	330K	5%	1/10W
R625	1-216-025-91	RES, CHIP	100	5%	1/10W
R626	1-216-083-00	METAL CHIP	27K	5%	1/10W
R627	1-216-073-00	METAL CHIP	10K	5%	1/10W
R628	1-216-097-91	RES, CHIP	100K	5%	1/10W
R629	1-216-049-91	RES, CHIP	1K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R630	1-216-049-91	RES, CHIP	1K	5%	1/10W
R631	1-216-073-00	METAL CHIP	10K	5%	1/10W
R632	1-216-033-00	METAL CHIP	220	5%	1/10W
R633	1-216-033-00	METAL CHIP	220	5%	1/10W
R634	1-216-073-00	METAL CHIP	10K	5%	1/10W
R635	1-216-073-00	METAL CHIP	10K	5%	1/10W
R636	1-216-049-91	RES, CHIP	1K	5%	1/10W
R637	1-216-097-91	RES, CHIP	100K	5%	1/10W
R638	1-216-097-91	RES, CHIP	100K	5%	1/10W
R639	1-216-049-91	RES, CHIP	1K	5%	1/10W
R641	1-216-073-00	METAL CHIP	10K	5%	1/10W
R642	1-216-041-00	METAL CHIP	470	5%	1/10W
R643	1-216-049-91	RES, CHIP	1K	5%	1/10W
R645	1-216-049-91	RES, CHIP	1K	5%	1/10W
R646	1-216-049-91	RES, CHIP	1K	5%	1/10W
R647	1-216-109-00	METAL CHIP	330K	5%	1/10W
R651	1-216-073-00	METAL CHIP	10K	5%	1/10W
R652	1-216-041-00	METAL CHIP	470	5%	1/10W
R653	1-216-049-91	RES, CHIP	1K	5%	1/10W
R654	1-216-049-91	RES, CHIP	1K	5%	1/10W
R655	1-216-295-91	SHORT	0		
R656	1-216-025-91	RES, CHIP	100	5%	1/10W
R657	1-216-295-91	SHORT	0		
R659	1-216-025-91	RES, CHIP	100	5%	1/10W
R660	1-216-295-91	SHORT	0		
R662	1-216-295-91	SHORT	0		
R664	1-216-295-91	SHORT	0		
R665	1-216-295-91	SHORT	0		
R667	1-216-295-91	SHORT	0		
R668	1-216-109-00	METAL CHIP	330K	5%	1/10W
R671	1-216-097-91	RES, CHIP	100K	5%	1/10W
R672	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R673	1-216-073-00	METAL CHIP	10K	5%	1/10W
R674	1-216-033-00	METAL CHIP	220	5%	1/10W
R675	1-216-109-00	METAL CHIP	330K	5%	1/10W
R676	1-216-025-91	RES, CHIP	100	5%	1/10W
R678	1-216-097-91	RES, CHIP	100K	5%	1/10W
R679	1-216-019-00	METAL CHIP	56	5%	1/10W
R680	1-216-019-00	METAL CHIP	56	5%	1/10W
R681	1-216-117-00	METAL CHIP	680K	5%	1/10W
R682	1-216-089-91	RES, CHIP	47K	5%	1/10W
R683	1-216-025-91	RES, CHIP	100	5%	1/10W
R684	1-216-037-00	METAL CHIP	330	5%	1/10W

* A-6065-340-A FL-102 BOARD, COMPLETE (Taiwan)
* A-6065-357-A FL-102 BOARD, COMPLETE (EXCEPT Taiwan)
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(Ref.No. 2,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C201	1-124-259-11	ELECT	4.7uF	20%	16V
C203	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C205	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C209	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C210	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C211	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C212	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C213	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C214	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C215	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C216	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C217	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C218	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C220	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C222	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C233	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C235	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C236	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C237	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C238	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C239	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C240	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C241	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C242	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C243	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C244	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C245	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C246	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
		< CONNECTOR >			
CN201	1-750-984-11	CONNECTOR, BOARD TO BOARD 15P			
CN202	1-785-731-11	CONNECTOR, FFC/FPC 17P			
CN203	1-785-730-11	CONNECTOR, FFC/FPC 9P			
* CN204	1-568-941-11	PIN, CONNECTOR 3P			
		< DIODE >			
D202	8-719-988-61	DIODE 1SS355TE-17			
D203	8-719-069-45	DIODE SELU5E23C-TP15 (MULTI CHANNEL)			
D204	8-719-056-06	DIODE SLR-342DCT32 (JOG)			
D211	8-719-061-08	DIODE SLR-322DC3F (VOCAL SUPPORT)			
D212	8-719-061-08	DIODE SLR-322DC3F (VOCAL)			
D213	8-719-061-08	DIODE SLR-322DC3F (VOCAL SELECT)			
D214	8-719-061-08	DIODE SLR-322DC3F (RESERVE)			
D215	8-719-061-08	DIODE SLR-322DC3F (AUTO PAUSE)			
D216	8-719-061-08	DIODE SLR-322DC3F (KARAOKE PON)			
D217	8-719-061-08	DIODE SLR-322DC3F (GUIDE MELODY)			
D218	8-719-064-11	DIODE SPR-325MVW (KARAOKE STAR)			
D219	8-719-914-43	DIODE DAN202K-T-146			
		< FERRITE BEAD >			
FB201	1-414-135-11	FERRITE 0uH			
FB202	1-414-135-11	FERRITE 0uH			
		< IC >			
IC201	8-759-575-53	IC M38B59EFFP			
IC202	8-759-326-78	IC PST9140NL			
IC204	8-759-366-45	IC NJU3713G (TE2)			
		< FLUORESCENT INDICATOR >			
ND201	1-517-886-11	INDICATOR TUBE, FLUORESCENT			
		< RESISTOR >			
R201	1-208-806-11	RES, CHIP	10K	0.50%	1/10W
R202	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R203	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R204	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R205	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R206	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R207	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R208	1-216-077-91	RES, CHIP	15K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R209	1-216-091-00	METAL CHIP	56K	5%	1/10W
R211	1-208-806-11	RES, CHIP	10K	0.50%	1/10W
R212	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R213	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R214	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R215	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R216	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R217	1-216-025-91	RES, CHIP	100	5%	1/10W
R218	1-216-073-00	METAL CHIP	10K	5%	1/10W
R221	1-208-806-11	RES, CHIP	10K	0.50%	1/10W
R222	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R223	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R224	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R226	1-216-025-91	RES, CHIP	100	5%	1/10W
R227	1-216-025-91	RES, CHIP	100	5%	1/10W
R231	1-216-025-91	RES, CHIP	100	5%	1/10W
R233	1-216-025-91	RES, CHIP	100	5%	1/10W
R234	1-216-025-91	RES, CHIP	100	5%	1/10W
R235	1-216-025-91	RES, CHIP	100	5%	1/10W
R236	1-216-037-00	METAL CHIP	330	5%	1/10W
R237	1-216-037-00	METAL CHIP	330	5%	1/10W
R238	1-216-037-00	METAL CHIP	330	5%	1/10W
R239	1-216-041-00	METAL CHIP	470	5%	1/10W
R240	1-216-037-00	METAL CHIP	330	5%	1/10W
R241	1-216-073-00	METAL CHIP	10K	5%	1/10W
R243	1-208-790-11	RES, CHIP	2.2K	0.50%	1/10W
R247	1-216-073-00	METAL CHIP	10K	5%	1/10W
R248	1-216-073-00	METAL CHIP	10K	5%	1/10W
R249	1-216-073-00	METAL CHIP	10K	5%	1/10W
R250	1-216-073-00	METAL CHIP	10K	5%	1/10W
R251	1-216-049-91	RES, CHIP	1K	5%	1/10W
R252	1-216-049-91	RES, CHIP	1K	5%	1/10W
R256	1-216-073-00	METAL CHIP	10K	5%	1/10W
R257	1-216-025-91	RES, CHIP	100	5%	1/10W
R258	1-216-025-91	RES, CHIP	100	5%	1/10W
R259	1-216-025-91	RES, CHIP	100	5%	1/10W
R260	1-216-025-91	RES, CHIP	100	5%	1/10W
R261	1-216-025-91	RES, CHIP	100	5%	1/10W
R262	1-216-025-91	RES, CHIP	100	5%	1/10W
R263	1-216-073-00	METAL CHIP	10K	5%	1/10W
R264	1-216-073-00	METAL CHIP	10K	5%	1/10W
R266	1-216-081-00	METAL CHIP	22K	5%	1/10W
R267	1-216-049-91	RES, CHIP	1K	5%	1/10W
R268	1-216-089-91	RES, CHIP	47K	5%	1/10W
R270	1-216-040-00	RES, CHIP	430	5%	1/10W
R271	1-216-073-00	METAL CHIP	10K	5%	1/10W
R272	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R273	1-216-025-91	RES, CHIP	100	5%	1/10W
R274	1-216-097-91	RES, CHIP	100K	5%	1/10W
R275	1-216-073-00	METAL CHIP	10K	5%	1/10W
R276	1-216-073-00	METAL CHIP	10K	5%	1/10W
R277	1-216-073-00	METAL CHIP	10K	5%	1/10W
R278	1-216-073-00	METAL CHIP	10K	5%	1/10W
R279	1-216-073-00	METAL CHIP	10K	5%	1/10W
R284	1-216-037-00	METAL CHIP	330	5%	1/10W
R285	1-216-037-00	METAL CHIP	330	5%	1/10W
R286	1-216-037-00	METAL CHIP	330	5%	1/10W
R287	1-216-037-00	METAL CHIP	330	5%	1/10W
R288	1-216-035-00	METAL CHIP	270	5%	1/10W
R289	1-216-033-00	METAL CHIP	220	5%	1/10W

Ref. No.	Part No.	Description			Remark
R291	1-216-093-91	RES, CHIP	68K	5%	1/10W
R292	1-216-093-91	RES, CHIP	68K	5%	1/10W
R293	1-216-093-91	RES, CHIP	68K	5%	1/10W
R294	1-216-093-91	RES, CHIP	68K	5%	1/10W
R295	1-216-093-91	RES, CHIP	68K	5%	1/10W
R296	1-216-093-91	RES, CHIP	68K	5%	1/10W
R297	1-216-093-91	RES, CHIP	68K	5%	1/10W
R298	1-216-025-91	RES, CHIP	100	5%	1/10W
R299	1-216-025-91	RES, CHIP	100	5%	1/10W
R901	1-208-806-11	RES, CHIP	10K	0.50%	1/10W
R902	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R903	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R904	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R905	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R906	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R907	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R908	1-216-077-91	RES, CHIP	15K	5%	1/10W
R910	1-216-073-00	METAL CHIP	10K	5%	1/10W
R911	1-216-073-00	METAL CHIP	10K	5%	1/10W
R912	1-216-073-00	METAL CHIP	10K	5%	1/10W
R913	1-216-073-00	METAL CHIP	10K	5%	1/10W
		< SWITCH >			
S201	1-771-349-21	SWITCH, KEYBOARD (■)			
S202	1-771-349-21	SWITCH, KEYBOARD (❚❚)			
S208	1-771-349-21	SWITCH, KEYBOARD (JOG)			
S212	1-771-349-21	SWITCH, KEYBOARD (OPEN/CLOSE ≙)			
S213	1-771-349-21	SWITCH, KEYBOARD (▷)			
S214	1-771-349-21	SWITCH, KEYBOARD (TITLE)			
S215	1-771-349-21	SWITCH, KEYBOARD (DVD MENU)			
S216	1-771-349-21	SWITCH, KEYBOARD (RETURN)			
S221	1-771-349-21	SWITCH, KEYBOARD (EFFECT DO)			
S222	1-771-349-21	SWITCH, KEYBOARD (EFFECT MODE)			
S230	1-475-235-21	ENCODER, ROTARY (PREV ⏮ ⏭ NEXT)			
S231	1-771-349-21	SWITCH, KEYBOARD (VOCAL SUPPORT)			
S232	1-771-349-21	SWITCH, KEYBOARD (VOCAL)			
S233	1-771-349-21	SWITCH, KEYBOARD (VOCAL SELECT)			
S234	1-771-349-21	SWITCH, KEYBOARD (RESERVE)			
S235	1-771-349-21	SWITCH, KEYBOARD (AUTO PAUSE)			
S236	1-771-349-21	SWITCH, KEYBOARD (KARAOKE PON)			
S237	1-771-349-21	SWITCH, KEYBOARD (GUIDE MELODY)			
S238	1-771-349-21	SWITCH, KEYBOARD (KARAOKE STAR)			
		< VIBRATOR >			
X201	1-577-358-21	VIBRATOR, CERAMIC (4MHz)			

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*	A-6065-341-A	FR-151 BOARD, COMPLETE (Taiwan)			
*	A-6065-347-A	FR-151 BOARD, COMPLETE (EXCEPT Taiwan)			
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(Ref.No. 4,000 Series)

		< CAPACITOR >			
C001	1-128-131-11	ELECT	22uF	20%	50V
C002	1-137-150-11	FILM	0.01uF	5%	100V
C003	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C004	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C005	1-128-131-11	ELECT	22uF	20%	50V
C051	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C052	1-131-651-21	CAPACITOR	10uF		16V
C219	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V

Ref. No.	Part No.	Description			Remark
C221	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C223	1-128-131-11	ELECT	22uF	20%	50V
		< CONNECTOR >			
* CN001	1-568-944-11	PIN, CONNECTOR 6P			
CN002	1-750-983-11	CONNECTOR, BOARD TO BOARD 15P			
		< DIODE >			
D001	8-719-041-97	DIODE MA113-(TX)			
D004	8-719-041-97	DIODE MA113-(TX)			
D071	8-719-064-11	DIODE SPR-325MVW (ON/STANDBY)			
D072	8-719-057-97	DIODE SEL5923A-TP15 (♯)			
D073	8-719-058-03	DIODE SEL5423E-TP15 (♮)			
D074	8-719-057-97	DIODE SEL5923A-TP15 (♭)			
D206	8-719-018-12	DIODE MA8330-L-TX			
D207	8-719-422-67	DIODE MA8062-H-TX			
		< FERRITE BEAD >			
FB001	1-414-135-11	FERRITE	0uH		
FB002	1-414-135-11	FERRITE	0uH		
FB003	1-414-135-11	FERRITE	0uH		
FB004	1-469-324-21	FERRITE	0uH		
		< IC >			
IC051	8-749-011-22	IC GP1U27X			
		< COIL >			
L001	1-408-978-21	INDUCTOR	47uH		
L002	1-414-936-21	INDUCTOR	22uH		
		< TRANSISTOR >			
Q001	8-729-808-01	TRANSISTOR 2SD1622-S			
Q002	8-729-808-01	TRANSISTOR 2SD1622-S			
Q201	8-729-804-41	TRANSISTOR 2SB1122-S			
		< RESISTOR >			
R002	1-216-073-00	METAL CHIP	10K	5%	1/10W
R003	1-216-073-00	METAL CHIP	10K	5%	1/10W
R011	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R012	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R071	1-216-047-91	RES, CHIP	820	5%	1/10W
R072	1-216-037-00	METAL CHIP	330	5%	1/10W
R077	1-216-023-00	METAL CHIP	82	5%	1/10W
R078	1-216-023-00	METAL CHIP	82	5%	1/10W
R079	1-216-023-00	METAL CHIP	82	5%	1/10W
R229	1-216-063-91	RES, CHIP	3.9K	5%	1/10W
R230	1-216-073-00	METAL CHIP	10K	5%	1/10W
		< SWITCH >			
S071	1-771-349-21	SWITCH, KEYBOARD (I/⏻)			
S072	1-771-349-21	SWITCH, KEYBOARD (♯)			
S073	1-771-349-21	SWITCH, KEYBOARD (♮)			
S074	1-771-349-21	SWITCH, KEYBOARD (♭)			
		< TRANSFORMER >			
T001	1-433-748-11	TRANSFORMER, DC-DC CONVERTER			

Ref. No.	Part No.	Description			Remark
*	A-6065-344-A	HP-112 BOARD, COMPLETE (Taiwan)			
*	A-6065-350-A	HP-112 BOARD, COMPLETE (EXCEPT Taiwan)			
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		(Ref.No. 2,000 Series)			
		< CAPACITOR >			
C701	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C702	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
		< CONNECTOR >			
* CN701	1-568-941-11	PIN, CONNECTOR 3P			
		< DIODE >			
D701	8-719-071-15	DIODE HZM6.8ZWA1TL			
D702	8-719-071-15	DIODE HZM6.8ZWA1TL			
		< FERRITE BEAD >			
FB701	1-414-135-11	FERRITE	0uH		
FB702	1-414-135-11	FERRITE	0uH		
FB703	1-414-135-11	FERRITE	0uH		
		< JACK >			
J701	1-785-505-41	JACK, LARGE TYPE (PHONES)			
		< VARIABLE RESISTOR >			
RV701	1-225-738-11	RES, VAR, CARBON 500/500 (LEVEL)			

Ref. No.	Part No.	Description			Remark
*	A-6065-339-A	MB-82 BOARD, COMPLETE (Taiwan)			
*	A-6065-353-A	MB-82 BOARD, COMPLETE (Chinese)			
*	A-6065-354-A	MB-82 BOARD, COMPLETE (Hong Kong, Singapore)			
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		(Ref.No. 1,000 Series)			
		< CAPACITOR >			
C001	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C002	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C003	1-126-246-11	ELECT CHIP	220uF	20%	4V
C004	1-126-204-11	ELECT CHIP	47uF	20%	16V
C005	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C007	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C008	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C009	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C010	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C011	1-125-822-11	TANTALUM	10uF	20%	10V
C012	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C013	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C015	1-126-246-11	ELECT CHIP	220uF	20%	4V
C016	1-125-822-11	TANTALUM	10uF	20%	10V
C017	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C018	1-125-822-11	TANTALUM	10uF	20%	10V
C019	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C201	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C202	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C203	1-125-822-11	TANTALUM	10uF	20%	10V
C204	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C206	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C209	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C210	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C211	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description				Remark
C212	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C213	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C304	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V	
C307	1-125-822-11	TANTALUM	10uF	20%	10V	
C309	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C310	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C312	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C313	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C314	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C315	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C316	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C317	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C318	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C319	1-125-822-11	TANTALUM	10uF	20%	10V	
C320	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C321	1-126-206-11	ELECT CHIP	100uF	20%	6.3V	
C322	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C323	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C324	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C325	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C327	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C328	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C329	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C331	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C333	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C334	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C337	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C338	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C339	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C341	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C343	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C344	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C401	1-125-822-11	TANTALUM	10uF	20%	10V	
C402	1-126-209-11	ELECT CHIP	100uF	20%	4V	
C403	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C404	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C405	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C406	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C408	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C410	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C411	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C414	1-125-822-11	TANTALUM	10uF	20%	10V	
C415	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C416	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C418	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C420	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C422	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C425	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C426	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C428	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C431	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C432	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C433	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C434	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C436	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C438	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C439	1-125-822-11	TANTALUM	10uF	20%	10V	
C440	1-125-822-11	TANTALUM	10uF	20%	10V	
C441	1-126-209-11	ELECT CHIP	100uF	20%	4V	

Ref. No.	Part No.	Description				Remark
C443	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C502	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C505	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C506	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C508	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C510	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C512	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C513	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C514	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C515	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C516	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C517	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C601	1-125-822-11	TANTALUM	10uF	20%	10V	
C602	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C603	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C604	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C605	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C606	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C607	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C608	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C701	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C702	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C703	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C704	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C705	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C706	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C707	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C708	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C709	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	
C710	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C711	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C712	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C713	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C714	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C715	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C717	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C801	1-126-204-11	ELECT CHIP	47uF	20%	16V	
C802	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C803	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C805	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	
C806	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	
C807	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C808	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C809	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V	
C810	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V	
C811	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C812	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C813	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C814	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C815	1-110-666-11	ELECT CHIP	22uF	20%	6.3V	
C816	1-104-601-11	ELECT CHIP	10uF	20%	10V	
C817	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	
C818	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C819	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V	
C820	1-164-230-11	CERAMIC CHIP	220PF	5%	50V	
C821	1-164-230-11	CERAMIC CHIP	220PF	5%	50V	
C822	1-126-204-11	ELECT CHIP	47uF	20%	16V	
C823	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C824	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C825	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	

MB-82

Ref. No.	Part No.	Description			Remark
C830	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C831	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C832	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C833	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C834	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C835	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C836	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C837	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C901	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C902	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C903	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C904	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C905	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C906	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C907	1-125-822-11	TANTALUM	10uF	20%	10V
C908	1-128-391-11	ELECT CHIP	330uF	20%	6.3V
C909	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C910	1-125-822-11	TANTALUM	10uF	20%	10V
C911	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C913	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C914	1-125-822-11	TANTALUM	10uF	20%	10V
C916	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C917	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C919	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C920	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C921	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C922	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C923	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C924	1-125-822-11	TANTALUM	10uF	20%	10V
C925	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C926	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C927	1-125-822-11	TANTALUM	10uF	20%	10V
C928	1-128-391-11	ELECT CHIP	330uF	20%	6.3V
C929	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C931	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C932	1-125-822-11	TANTALUM	10uF	20%	10V
C933	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C934	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C935	1-125-822-11	TANTALUM	10uF	20%	10V
C937	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C939	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C940	1-125-822-11	TANTALUM	10uF	20%	10V
		< CONNECTOR >			
CN001	1-785-728-21	PIN (PC BOARD), CONNECTOR 7P			
CN002	1-779-936-11	CONNECTOR, FFC/FPC 18P			
CN003	1-779-936-11	CONNECTOR, FFC/FPC 18P			
CN004	1-778-772-11	CONNECTOR, FFC/FPC 7P			
CN005	1-784-327-11	CONNECTOR, FFC/FPC 28P			
CN006	1-774-768-11	CONNECTOR, FFC/FPC 17P			
CN007	1-778-274-11	CONNECTOR, FFC/FPC 13P			
CN008	1-774-767-11	CONNECTOR, FFC/FPC 15P			
CN010	1-573-806-21	PIN, CONNECTOR (1.5mm) (SMD) 6P			
CN011	1-573-806-21	PIN, CONNECTOR (1.5mm) (SMD) 6P			
* CN012	1-573-768-21	PIN, CONNECTOR (1.5mm) (SMD) 5P			
		< DIODE >			
D701	8-719-988-61	DIODE	1SS355TE-17		
D801	8-719-941-09	DIODE	DAP202U		
D802	8-719-988-61	DIODE	1SS355TE-17		

Ref. No.	Part No.	Description			Remark
D803	8-719-941-09	DIODE	DAP202U		
D804	8-719-941-86	DIODE	DAN202U		
D805	8-719-941-86	DIODE	DAN202U		
D806	8-719-988-61	DIODE	1SS355TE-17		
D807	8-719-988-61	DIODE	1SS355TE-17		
		< FERRITE BEAD >			
FB001	1-469-324-21	FERRITE	0uH		
FB002	1-469-324-21	FERRITE	0uH		
FB003	1-469-324-21	FERRITE	0uH		
FB004	1-469-324-21	FERRITE	0uH		
FB005	1-469-324-21	FERRITE	0uH		
FB006	1-469-324-21	FERRITE	0uH		
FB007	1-469-324-21	FERRITE	0uH		
FB008	1-469-324-21	FERRITE	0uH		
FB010	1-469-116-21	FERRITE	0uH		
FB011	1-469-116-21	FERRITE	0uH		
FB012	1-469-116-21	FERRITE	0uH		
FB014	1-469-116-21	FERRITE	0uH		
FB015	1-469-116-21	FERRITE	0uH		
FB016	1-216-801-11	METAL CHIP	22	5%	1/16W
FB017	1-469-116-21	FERRITE	0uH		
FB018	1-469-116-21	FERRITE	0uH		
FB019	1-469-116-21	FERRITE	0uH		
FB020	1-469-116-21	FERRITE	0uH		
FB021	1-469-116-21	FERRITE	0uH		
FB022	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
FB024	1-469-116-21	FERRITE	0uH		
FB026	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
FB028	1-469-116-21	FERRITE	0uH		
FB029	1-469-324-21	FERRITE	0uH		
FB030	1-469-116-21	FERRITE	0uH		
FB031	1-469-116-21	FERRITE	0uH		
FB032	1-469-116-21	FERRITE	0uH		
FB033	1-469-116-21	FERRITE	0uH		
FB035	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
FB037	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
FB039	1-500-283-11	INDUCTOR CHIP	0uH		
FB040	1-469-116-21	FERRITE	0uH		
FB042	1-500-283-11	INDUCTOR CHIP	0uH		
FB043	1-500-283-11	INDUCTOR CHIP	0uH		
FB045	1-500-283-11	INDUCTOR CHIP	0uH		
FB047	1-469-116-21	FERRITE	0uH		
FB049	1-469-116-21	FERRITE	0uH		
FB051	1-469-116-21	FERRITE	0uH		
FB053	1-500-283-11	INDUCTOR CHIP	0uH		
FB054	1-500-283-11	INDUCTOR CHIP	0uH		
FB055	1-500-283-11	INDUCTOR CHIP	0uH		
FB056	1-500-283-11	INDUCTOR CHIP	0uH		
FB058	1-500-283-11	INDUCTOR CHIP	0uH		
FB060	1-500-283-11	INDUCTOR CHIP	0uH		
FB061	1-469-116-21	FERRITE	0uH		
FB063	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
FB065	1-469-116-21	FERRITE	0uH		
FB067	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
FB069	1-469-116-21	FERRITE	0uH		
FB071	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
FB073	1-469-116-21	FERRITE	0uH		
FB075	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
FB077	1-469-116-21	FERRITE	0uH		

Ref. No.	Part No.	Description			Remark
FB078	1-216-801-11	METAL CHIP	22	5%	1/16W
FB080	1-216-801-11	METAL CHIP	22	5%	1/16W
FB081	1-216-801-11	METAL CHIP	22	5%	1/16W
FB083	1-216-801-11	METAL CHIP	22	5%	1/16W
FB084	1-216-801-11	METAL CHIP	22	5%	1/16W
FB085	1-216-801-11	METAL CHIP	22	5%	1/16W
FB086	1-216-801-11	METAL CHIP	22	5%	1/16W
FB087	1-216-801-11	METAL CHIP	22	5%	1/16W
FB088	1-216-801-11	METAL CHIP	22	5%	1/16W
FB091	1-469-116-21	FERRITE	0uH		
FB092	1-469-116-21	FERRITE	0uH		
FB093	1-469-116-21	FERRITE	0uH		
FB094	1-469-116-21	FERRITE	0uH		
FB095	1-469-116-21	FERRITE	0uH		
FB096	1-469-116-21	FERRITE	0uH		
FB097	1-469-116-21	FERRITE	0uH		
FB098	1-469-116-21	FERRITE	0uH		
FB099	1-469-116-21	FERRITE	0uH		
FB100	1-469-116-21	FERRITE	0uH		
FB101	1-469-116-21	FERRITE	0uH		
FB103	1-469-116-21	FERRITE	0uH		
FB104	1-469-116-21	FERRITE	0uH		
FB105	1-469-324-21	FERRITE	0uH		
FB106	1-469-324-21	FERRITE	0uH		
		< FILTER >			
FL001	1-234-177-21	FILTER, CHIP EMI			
FL002	1-234-177-21	FILTER, CHIP EMI			
FL003	1-233-893-21	FILTER, CHIP EMI			
FL004	1-233-893-21	FILTER, CHIP EMI			
FL005	1-234-177-21	FILTER, CHIP EMI			
FL006	1-234-177-21	FILTER, CHIP EMI			
FL008	1-234-177-21	FILTER, CHIP EMI			
FL009	1-234-177-21	FILTER, CHIP EMI			
FL010	1-234-177-21	FILTER, CHIP EMI			
FL014	1-234-177-21	FILTER, CHIP EMI			
FL015	1-234-177-21	FILTER, CHIP EMI			
FL016	1-234-177-21	FILTER, CHIP EMI			
FL202	1-234-177-21	FILTER, CHIP EMI			
FL203	1-234-177-21	FILTER, CHIP EMI			
FL204	1-234-177-21	FILTER, CHIP EMI			
FL205	1-234-177-21	FILTER, CHIP EMI			
FL301	1-234-177-21	FILTER, CHIP EMI			
FL302	1-234-177-21	FILTER, CHIP EMI			
FL303	1-234-177-21	FILTER, CHIP EMI			
FL401	1-234-177-21	FILTER, CHIP EMI			
FL402	1-234-177-21	FILTER, CHIP EMI			
FL403	1-234-177-21	FILTER, CHIP EMI			
FL404	1-234-177-21	FILTER, CHIP EMI			
FL405	1-234-177-21	FILTER, CHIP EMI			
FL501	1-234-177-21	FILTER, CHIP EMI			
FL502	1-234-177-21	FILTER, CHIP EMI			
FL503	1-234-177-21	FILTER, CHIP EMI			
FL601	1-234-177-21	FILTER, CHIP EMI			
FL602	1-234-177-21	FILTER, CHIP EMI			
FL701	1-234-177-21	FILTER, CHIP EMI			
FL901	1-234-177-21	FILTER, CHIP EMI			
FL904	1-234-177-21	FILTER, CHIP EMI			

Ref. No.	Part No.	Description			Remark
		< IC >			
IC001	8-759-594-91	IC SM8701AM-E2			
IC003	8-759-531-92	IC TC7WH04FU (TE12R)			
IC004	8-759-531-92	IC TC7WH04FU (TE12R)			
IC005	8-759-486-55	IC NJM2370U33-TE2			
IC201	8-759-469-25	IC AK6440AF-E2			
IC202	8-759-599-39	IC MB91101PFV-G-BND-R			
IC203	8-759-580-60	IC SN74AHCT08PWR			
IC204	8-759-573-65	IC IDT71V016S20PHAU-TL			
IC205	8-759-581-29	IC MBM29LV160B-241A-10			
IC207	8-759-427-92	IC PST9126NL			
IC302	8-759-486-55	IC NJM2370U33-TE2			
IC303	8-759-567-27	IC CXD8784R			
IC304	8-759-567-35	IC KM416V1200CT-L6T			
IC401	8-752-398-60	IC CXD1930BQ			
IC402	8-759-567-34	IC KM416S1020CT-G10T			
IC403	8-759-567-34	IC KM416S1020CT-G10T			
IC404	8-759-486-55	IC NJM2370U33-TE2			
IC501	8-752-400-43	IC CXD1901AR			
IC502	8-752-390-12	IC CXD1857Q			
IC601	8-759-567-30	IC CXD8788Q			
IC602	8-759-567-55	IC KM29V16000AT-T			
IC701	8-759-598-87	IC CXD8791AQ			
IC702	8-759-337-40	IC NJM2904V (TE2)			
IC801	8-759-522-13	IC BA5981FP-E2			
IC802	8-759-567-26	IC BA5983FP-E2			
IC803	8-759-338-78	IC BA10324AFV-E2			
IC901	8-752-394-92	IC CXD2725Q			
IC902	8-759-572-26	IC CXD8799N-T2			
IC904	8-759-052-52	IC L78M05T-FA			
IC905	8-759-572-26	IC CXD8799N-T2			
IC906	8-759-572-26	IC CXD8799N-T2			
IC907	8-759-572-26	IC CXD8799N-T2			
		< COIL >			
L001	1-414-754-11	INDUCTOR	10uH		
L402	1-414-754-11	INDUCTOR	10uH		
L903	1-414-757-11	INDUCTOR	100uH		
		< TRANSISTOR >			
Q801	8-729-015-74	TRANSISTOR	UN5111-TX		
Q802	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q803	8-729-230-63	TRANSISTOR	2SC4116-YG		
		< RESISTOR >			
R001	1-216-833-91	RES, CHIP	10K	5%	1/16W
R002	1-216-833-91	RES, CHIP	10K	5%	1/16W
R003	1-216-833-91	RES, CHIP	10K	5%	1/16W
R004	1-216-821-11	METAL CHIP	1K	5%	1/16W
R005	1-216-821-11	METAL CHIP	1K	5%	1/16W
R006	1-216-821-11	METAL CHIP	1K	5%	1/16W
R007	1-216-864-11	METAL CHIP	0	5%	1/16W
R009	1-216-864-11	METAL CHIP	0	5%	1/16W
R010	1-216-801-11	METAL CHIP	22	5%	1/16W
R012	1-216-801-11	METAL CHIP	22	5%	1/16W
R014	1-216-801-11	METAL CHIP	22	5%	1/16W
R036	1-216-821-11	METAL CHIP	1K	5%	1/16W
R037	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R040	1-216-864-11	METAL CHIP	0	5%	1/16W
R044	1-216-829-11	METAL CHIP	4.7K	5%	1/16W

MB-82

Ref. No.	Part No.	Description			Remark
R045	1-216-833-91	RES, CHIP	10K	5%	1/16W
R053	1-216-833-91	RES, CHIP	10K	5%	1/16W
R202	1-216-801-11	METAL CHIP	22	5%	1/16W
R203	1-216-833-91	RES, CHIP	10K	5%	1/16W
R204	1-216-833-91	RES, CHIP	10K	5%	1/16W
R205	1-216-845-11	METAL CHIP	100K	5%	1/16W
R206	1-216-845-11	METAL CHIP	100K	5%	1/16W
R207	1-216-833-91	RES, CHIP	10K	5%	1/16W
R212	1-216-813-11	METAL CHIP	220	5%	1/16W
R213	1-216-801-11	METAL CHIP	22	5%	1/16W
R217	1-216-833-91	RES, CHIP	10K	5%	1/16W
R222	1-216-833-91	RES, CHIP	10K	5%	1/16W
R223	1-216-833-91	RES, CHIP	10K	5%	1/16W
R225	1-216-833-91	RES, CHIP	10K	5%	1/16W
R226	1-216-833-91	RES, CHIP	10K	5%	1/16W
R227	1-216-813-11	METAL CHIP	220	5%	1/16W
R228	1-216-813-11	METAL CHIP	220	5%	1/16W
R229	1-216-813-11	METAL CHIP	220	5%	1/16W
R230	1-216-813-11	METAL CHIP	220	5%	1/16W
R231	1-216-813-11	METAL CHIP	220	5%	1/16W
R232	1-216-813-11	METAL CHIP	220	5%	1/16W
R235	1-216-864-11	METAL CHIP	0	5%	1/16W
R237	1-216-246-00	RES, CHIP	100K	5%	1/8W
					(EXCEPT Chinese)
R238	1-216-220-00	RES, CHIP	8.2K	5%	1/8W
R239	1-216-220-00	RES, CHIP	8.2K	5%	1/8W
					(Chinese)
R239	1-216-238-91	RES, CHIP	47K	5%	1/8W
					(EXCEPT Chinese)
R240	1-216-246-00	RES, CHIP	100K	5%	1/8W
					(EXCEPT Chinese)
R241	1-216-220-00	RES, CHIP	8.2K	5%	1/8W
R305	1-218-879-11	RES, CHIP	22K	0.50%	1/16W
R306	1-218-831-11	RES, CHIP	220	0.50%	1/16W
R307	1-218-883-11	RES, CHIP	33K	0.50%	1/16W
R308	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R309	1-216-838-11	METAL CHIP	27K	5%	1/16W
R310	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R311	1-216-821-11	METAL CHIP	1K	5%	1/16W
R313	1-216-833-91	RES, CHIP	10K	5%	1/16W
R314	1-216-833-91	RES, CHIP	10K	5%	1/16W
R315	1-216-833-91	RES, CHIP	10K	5%	1/16W
R316	1-218-855-11	RES, CHIP	2.2K	0.50%	1/16W
R317	1-218-871-11	RES, CHIP	10K	0.50%	1/16W
R318	1-216-849-11	METAL CHIP	220K	5%	1/16W
R319	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R320	1-218-853-11	RES, CHIP	1.8K	0.50%	1/16W
R321	1-218-847-11	RES, CHIP	1K	0.50%	1/16W
R322	1-218-871-11	RES, CHIP	10K	0.50%	1/16W
R323	1-216-833-91	RES, CHIP	10K	5%	1/16W
R324	1-216-833-91	RES, CHIP	10K	5%	1/16W
R325	1-216-833-91	RES, CHIP	10K	5%	1/16W
R326	1-216-833-91	RES, CHIP	10K	5%	1/16W
R327	1-216-833-91	RES, CHIP	10K	5%	1/16W
R328	1-216-833-91	RES, CHIP	10K	5%	1/16W
R329	1-216-833-91	RES, CHIP	10K	5%	1/16W
R330	1-216-833-91	RES, CHIP	10K	5%	1/16W
R331	1-216-833-91	RES, CHIP	10K	5%	1/16W
R332	1-216-833-91	RES, CHIP	10K	5%	1/16W
R337	1-216-809-11	METAL CHIP	100	5%	1/16W
R338	1-216-833-91	RES, CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R339	1-216-833-91	RES, CHIP	10K	5%	1/16W
R340	1-216-833-91	RES, CHIP	10K	5%	1/16W
R341	1-216-809-11	METAL CHIP	100	5%	1/16W
R403	1-216-833-91	RES, CHIP	10K	5%	1/16W
R404	1-216-864-11	METAL CHIP	0	5%	1/16W
R405	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R406	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R407	1-216-833-91	RES, CHIP	10K	5%	1/16W
R409	1-216-864-11	METAL CHIP	0	5%	1/16W
R410	1-216-821-11	METAL CHIP	1K	5%	1/16W
R411	1-216-833-91	RES, CHIP	10K	5%	1/16W
R412	1-216-809-11	METAL CHIP	100	5%	1/16W
R426	1-216-813-11	METAL CHIP	220	5%	1/16W
R427	1-216-813-11	METAL CHIP	220	5%	1/16W
R428	1-216-813-11	METAL CHIP	220	5%	1/16W
R429	1-216-813-11	METAL CHIP	220	5%	1/16W
R430	1-216-813-11	METAL CHIP	220	5%	1/16W
R431	1-216-813-11	METAL CHIP	220	5%	1/16W
R501	1-216-809-11	METAL CHIP	100	5%	1/16W
R519	1-216-809-11	METAL CHIP	100	5%	1/16W
R520	1-216-833-91	RES, CHIP	10K	5%	1/16W
R521	1-216-833-91	RES, CHIP	10K	5%	1/16W
R522	1-216-833-91	RES, CHIP	10K	5%	1/16W
R527	1-216-833-91	RES, CHIP	10K	5%	1/16W
R528	1-216-833-91	RES, CHIP	10K	5%	1/16W
R537	1-216-806-11	RES, CHIP	56	5%	1/16W
R542	1-216-864-11	METAL CHIP	0	5%	1/16W
R543	1-216-864-11	METAL CHIP	0	5%	1/16W
R544	1-216-864-11	METAL CHIP	0	5%	1/16W
R545	1-216-864-11	METAL CHIP	0	5%	1/16W
R546	1-216-864-11	METAL CHIP	0	5%	1/16W
R547	1-216-864-11	METAL CHIP	0	5%	1/16W
R604	1-216-833-91	RES, CHIP	10K	5%	1/16W
R630	1-216-833-91	RES, CHIP	10K	5%	1/16W
R631	1-216-833-91	RES, CHIP	10K	5%	1/16W
R632	1-216-833-91	RES, CHIP	10K	5%	1/16W
R633	1-216-833-91	RES, CHIP	10K	5%	1/16W
R634	1-216-833-91	RES, CHIP	10K	5%	1/16W
R635	1-216-833-91	RES, CHIP	10K	5%	1/16W
R636	1-216-815-11	METAL CHIP	330	5%	1/16W
R637	1-216-809-11	METAL CHIP	100	5%	1/16W
R638	1-216-809-11	METAL CHIP	100	5%	1/16W
R639	1-216-809-11	METAL CHIP	100	5%	1/16W
R640	1-216-809-11	METAL CHIP	100	5%	1/16W
R641	1-216-809-11	METAL CHIP	100	5%	1/16W
R642	1-216-809-11	METAL CHIP	100	5%	1/16W
R643	1-216-815-11	METAL CHIP	330	5%	1/16W
R647	1-216-833-91	RES, CHIP	10K	5%	1/16W
R701	1-216-805-11	METAL CHIP	47	5%	1/16W
R702	1-216-817-11	METAL CHIP	470	5%	1/16W
R703	1-216-817-11	METAL CHIP	470	5%	1/16W
R704	1-216-817-11	METAL CHIP	470	5%	1/16W
R705	1-216-817-11	METAL CHIP	470	5%	1/16W
R706	1-216-821-11	METAL CHIP	1K	5%	1/16W
R707	1-216-844-11	METAL CHIP	82K	5%	1/16W
R708	1-216-844-11	METAL CHIP	82K	5%	1/16W
R709	1-216-844-11	METAL CHIP	82K	5%	1/16W
R710	1-216-844-11	METAL CHIP	82K	5%	1/16W
R711	1-216-833-91	RES, CHIP	10K	5%	1/16W
R712	1-216-839-11	METAL CHIP	33K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R720	1-216-821-11	METAL CHIP	1K	5%	1/16W
R721	1-216-821-11	METAL CHIP	1K	5%	1/16W
R722	1-216-801-11	METAL CHIP	22	5%	1/16W
R748	1-216-833-91	RES, CHIP	10K	5%	1/16W
R751	1-216-821-11	METAL CHIP	1K	5%	1/16W
R752	1-216-821-11	METAL CHIP	1K	5%	1/16W
R755	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R757	1-216-864-11	METAL CHIP	0	5%	1/16W
R758	1-216-864-11	METAL CHIP	0	5%	1/16W
R801	1-216-841-11	METAL CHIP	47K	5%	1/16W
R802	1-216-841-11	METAL CHIP	47K	5%	1/16W
R803	1-216-841-11	METAL CHIP	47K	5%	1/16W
R804	1-216-841-11	METAL CHIP	47K	5%	1/16W
R805	1-216-840-11	METAL CHIP	39K	5%	1/16W
R806	1-216-840-11	METAL CHIP	39K	5%	1/16W
R807	1-216-835-11	METAL CHIP	15K	5%	1/16W
R808	1-216-835-11	METAL CHIP	15K	5%	1/16W
R809	1-216-844-11	METAL CHIP	82K	5%	1/16W
R810	1-216-844-11	METAL CHIP	82K	5%	1/16W
R811	1-218-907-11	RES, CHIP	330K	0.50%	1/16W
R812	1-218-895-11	RES, CHIP	100K	0.50%	1/16W
R813	1-218-895-11	RES, CHIP	100K	0.50%	1/16W
R814	1-218-907-11	RES, CHIP	330K	0.50%	1/16W
R815	1-216-836-11	METAL CHIP	18K	5%	1/16W
R816	1-216-845-11	METAL CHIP	100K	5%	1/16W
R817	1-216-852-11	METAL CHIP	390K	5%	1/16W
R818	1-216-852-11	METAL CHIP	390K	5%	1/16W
R819	1-216-849-11	METAL CHIP	220K	5%	1/16W
R820	1-216-851-11	METAL CHIP	330K	5%	1/16W
R821	1-216-840-11	METAL CHIP	39K	5%	1/16W
R822	1-216-845-11	METAL CHIP	100K	5%	1/16W
R823	1-216-833-91	RES, CHIP	10K	5%	1/16W
R824	1-216-833-91	RES, CHIP	10K	5%	1/16W
R825	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R826	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R827	1-216-851-11	METAL CHIP	330K	5%	1/16W
R828	1-216-837-11	METAL CHIP	22K	5%	1/16W
R829	1-216-837-11	METAL CHIP	22K	5%	1/16W
R831	1-216-833-91	RES, CHIP	10K	5%	1/16W
R832	1-216-833-91	RES, CHIP	10K	5%	1/16W
R834	1-216-847-11	METAL CHIP	150K	5%	1/16W
R835	1-216-847-11	METAL CHIP	150K	5%	1/16W
R836	1-216-847-11	METAL CHIP	150K	5%	1/16W
R837	1-216-844-11	METAL CHIP	82K	5%	1/16W
R838	1-216-848-11	METAL CHIP	180K	5%	1/16W
R839	1-216-848-11	METAL CHIP	180K	5%	1/16W
R840	1-216-848-11	METAL CHIP	180K	5%	1/16W
R841	1-216-843-11	METAL CHIP	68K	5%	1/16W
R842	1-216-844-11	METAL CHIP	82K	5%	1/16W
R843	1-216-844-11	METAL CHIP	82K	5%	1/16W
R844	1-216-843-11	METAL CHIP	68K	5%	1/16W
R845	1-216-843-11	METAL CHIP	68K	5%	1/16W
R846	1-216-841-11	METAL CHIP	47K	5%	1/16W
R847	1-216-296-91	SHORT	0		
R851	1-216-833-91	RES, CHIP	10K	5%	1/16W
R852	1-216-833-91	RES, CHIP	10K	5%	1/16W
R853	1-216-833-91	RES, CHIP	10K	5%	1/16W
R854	1-216-833-91	RES, CHIP	10K	5%	1/16W
R855	1-216-834-11	METAL CHIP	12K	5%	1/16W
R856	1-216-836-11	METAL CHIP	18K	5%	1/16W
R857	1-218-899-11	RES, CHIP	150K	0.50%	1/16W
R858	1-218-899-11	RES, CHIP	150K	0.50%	1/16W
R859	1-218-889-11	RES, CHIP	56K	0.50%	1/16W
R860	1-218-889-11	RES, CHIP	56K	0.50%	1/16W
R861	1-216-296-91	SHORT	0		
R864	1-216-138-00	METAL CHIP	3.3	5%	1/8W
R865	1-216-833-91	RES, CHIP	10K	5%	1/16W
R866	1-216-833-91	RES, CHIP	10K	5%	1/16W
R867	1-216-833-91	RES, CHIP	10K	5%	1/16W
R868	1-216-833-91	RES, CHIP	10K	5%	1/16W
R869	1-216-833-91	RES, CHIP	10K	5%	1/16W
R870	1-216-815-11	METAL CHIP	330	5%	1/16W
R871	1-216-817-11	METAL CHIP	470	5%	1/16W
R872	1-216-815-11	METAL CHIP	330	5%	1/16W
R873	1-216-821-11	METAL CHIP	1K	5%	1/16W
R901	1-216-809-11	METAL CHIP	100	5%	1/16W
R902	1-216-864-11	METAL CHIP	0	5%	1/16W
R904	1-216-864-11	METAL CHIP	0	5%	1/16W
R905	1-216-821-11	METAL CHIP	1K	5%	1/16W
R909	1-216-809-11	METAL CHIP	100	5%	1/16W
R912	1-216-809-11	METAL CHIP	100	5%	1/16W
R915	1-216-809-11	METAL CHIP	100	5%	1/16W
R918	1-216-809-11	METAL CHIP	100	5%	1/16W
R919	1-216-857-11	METAL CHIP	1M	5%	1/16W
R920	1-216-839-11	METAL CHIP	33K	5%	1/16W
R921	1-216-835-11	METAL CHIP	15K	5%	1/16W
R923	1-216-837-11	METAL CHIP	22K	5%	1/16W
R925	1-216-864-11	METAL CHIP	0	5%	1/16W
R926	1-216-864-11	METAL CHIP	0	5%	1/16W
R931	1-216-864-11	METAL CHIP	0	5%	1/16W
R932	1-216-864-11	METAL CHIP	0	5%	1/16W
R937	1-216-864-11	METAL CHIP	0	5%	1/16W
R945	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
* RB201	1-233-270-11	NETWORK, RES (8 GANG) 10K			
* RB202	1-233-270-11	NETWORK, RES (8 GANG) 10K			
* RB203	1-233-270-11	NETWORK, RES (8 GANG) 10K			
* RB204	1-233-270-11	NETWORK, RES (8 GANG) 10K			
* RB601	1-233-270-11	NETWORK, RES (8 GANG) 10K			
		< VARIABLE RESISTOR >			
RV401	1-223-583-11	RES, ADJ, CARBON 1K			
		< VIBRATOR >			
X001	1-781-308-21	OSCILLATOR, CRYSTAL (27MHz)			
X201	1-781-185-21	VIBRATOR, CERAMIC (12.5MHz)			

Ref. No.	Part No.	Description			Remark
*	A-6065-342-A	MC-120 BOARD, COMPLETE (Taiwan)			
*	A-6065-348-A	MC-120 BOARD, COMPLETE (EXCEPT Taiwan)			
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		(Ref.No. 2,000 Series)			
		< CAPACITOR >			
C101	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C102	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C106	1-128-551-11	ELECT	22uF	20%	25V
C107	1-128-551-11	ELECT	22uF	20%	25V
C109	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C111	1-126-961-11	ELECT	2.2uF	20%	50V

Ref. No.	Part No.	Description			Remark
C114	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C115	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C118	1-126-961-11	ELECT	2.2uF	20%	50V
C119	1-104-664-11	ELECT	47uF	20%	16V
C121	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C124	1-104-664-11	ELECT	47uF	20%	16V
C129	1-126-964-11	ELECT	10uF	20%	50V
C130	1-126-964-11	ELECT	10uF	20%	50V
C132	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C134	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C135	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
		< CONNECTOR >			
CN101	1-695-368-31	PIN, CONNECTOR (PC BOARD) 7P			
		< DIODE >			
D103	8-719-056-82	DIODE UDZ-TE-17-6.2B			
D104	8-719-056-82	DIODE UDZ-TE-17-6.2B			
D105	8-719-800-76	DIODE 1SS226			
D106	8-719-800-76	DIODE 1SS226			
		< FERRITE BEAD >			
FB101	1-414-135-11	FERRITE	0uH		
FB102	1-414-135-11	FERRITE	0uH		
FB103	1-414-135-11	FERRITE	0uH		
FB104	1-414-135-11	FERRITE	0uH		
FB105	1-414-135-11	FERRITE	0uH		
FB106	1-414-135-11	FERRITE	0uH		
FB107	1-414-135-11	FERRITE	0uH		
FB108	1-414-135-11	FERRITE	0uH		
FB109	1-414-135-11	FERRITE	0uH		
FB110	1-414-135-11	FERRITE	0uH		
FB111	1-414-135-11	FERRITE	0uH		
FB112	1-414-135-11	FERRITE	0uH		
		< IC >			
IC102	8-759-369-74	IC NJM4556AM-TE2			
		< JACK >			
J101	1-750-990-31	JACK (LARGE TYPE) 2P (MIC 1/MIC 2)			
J103	1-764-188-21	JACK (SMALL TYPE) (DIA. 3.5) (CONTROL)			
		< RESISTOR >			
R104	1-216-025-91	RES, CHIP	100	5%	1/10W
R106	1-216-025-91	RES, CHIP	100	5%	1/10W
R107	1-216-025-91	RES, CHIP	100	5%	1/10W
R108	1-216-655-11	METAL CHIP	1.5K	0.5%	1/10W
R109	1-216-655-11	METAL CHIP	1.5K	0.5%	1/10W
R121	1-216-097-91	RES, CHIP	100K	5%	1/10W
R122	1-216-097-91	RES, CHIP	100K	5%	1/10W
R126	1-216-097-91	RES, CHIP	100K	5%	1/10W
R127	1-216-097-91	RES, CHIP	100K	5%	1/10W
R129	1-216-049-91	RES, CHIP	1K	5%	1/10W
R131	1-216-089-91	RES, CHIP	47K	5%	1/10W
R133	1-216-049-91	RES, CHIP	1K	5%	1/10W
R136	1-216-089-91	RES, CHIP	47K	5%	1/10W
R142	1-216-025-91	RES, CHIP	100	5%	1/10W
R143	1-216-025-91	RES, CHIP	100	5%	1/10W
R144	1-216-109-00	METAL CHIP	330K	5%	1/10W
R145	1-216-109-00	METAL CHIP	330K	5%	1/10W
R146	1-216-019-00	METAL CHIP	56	5%	1/10W
R147	1-216-019-00	METAL CHIP	56	5%	1/10W

Ref. No.	Part No.	Description			Remark
*	A-6066-012-A	MS-29 BOARD, COMPLETE (Taiwan)			
*	A-6066-013-A	MS-46 BOARD, COMPLETE (EXCEPT Taiwan)			
		**********************			
					(Ref.No. 3,000 Series)
		< CONNECTOR >			
CN001	1-564-722-11	PIN, CONNECTOR (SMALL TYPE) 6P			
		< SWITCH >			
S001	1-771-562-11	SWITCH, LEVER (TRAY SENSOR)			
S002	1-762-386-11	SWITCH, PUSH (CHUCK SENSOR)			

Ref. No.	Part No.	Description			Remark
*	1-468-359-11	POWER BLOCK (HS-030SH) (EXCEPT Taiwan)			
*	1-468-359-31	POWER BLOCK (HS-030SU) (Taiwan)			
		***********************			
					(Ref.No. 6,000 Series)
		< CAPACITOR >			
C110	9-884-088-01	ELECT	56uF		400V (HS-030SH)
C110	9-884-096-01	ELECT	220uF		200V (HS-030SU)
C131	1-126-964-11	ELECT	10uF		50V
C132	1-126-960-11	ELECT	1uF		50V
C186	1-107-967-11	ELECT	1uF		400V
C211	1-111-087-11	ELECT	330uF		35V
C213	1-126-947-11	ELECT	47uF		35V
C301	1-126-960-11	ELECT	1uF		50V
C311	1-111-087-11	ELECT	330uF		35V
C313	1-126-947-11	ELECT	47uF		35V
C401	1-126-948-11	ELECT	100uF		35V
C402	1-126-960-11	ELECT	1uF		50V
C511	1-126-942-11	ELECT	1000uF		25V
C512	1-126-947-11	ELECT	47uF		35V
C611	1-111-090-11	ELECT	560uF		35V
C613	1-126-947-11	ELECT	47uF		35V
		< DIODE >			
D101	9-884-089-01	DIODE S1WBA60			
D102	8-719-160-68	DIODE RD18FB2 (HS-030SH)			
D104	8-719-109-63	DIODE RD3.0ESB2 (HS-030SU)			
D104	8-719-109-57	DIODE RD2.4ESB2 (HS-030SH)			
D105	9-980-073-01	DIODE 1SS270A			
D131	9-980-073-01	DIODE 1SS270A			
D132	9-980-073-01	DIODE 1SS270A			
D133	8-719-109-60	DIODE RD2.7ESB2			
D135	9-980-073-01	DIODE 1SS270A			
D182	8-719-109-60	DIODE RD2.7ESB2			
D183	9-980-073-01	DIODE 1SS270A			
D184	9-880-435-01	DIODE D1N60			
D185	8-719-160-68	DIODE RD18FB2 (HS-030SH)			
D211	8-719-027-43	DIODE S2L20U			
D212	8-719-160-78	DIODE RD24FB2			
D311	8-719-200-59	DIODE 21DQ04			
D401	8-719-210-21	DIODE 11EQS04			
D402	8-719-110-02	DIODE RD7.5ESB1			

Ref. No.	Part No.	Description	Remark
D511	8-719-027-43	DIODE S2L20U	
D611	8-719-500-50	DIODE D3S4M	
		< FUSE >	
⚠F101	1-532-503-31	FUSE (1.6A/250V)	
		< IC >	
IC301	8-759-420-19	IC AN1431T	
IC401	8-759-420-19	IC AN1431T	
		< IC LINK >	
⚠P211	1-533-588-11	IC LINK 500mA	
⚠P311	1-533-593-11	IC LINK 2A	
⚠P511	1-533-589-11	IC LINK 750mA	
⚠P611	9-884-090-01	IC LINK 1.5A	
		< PHOTO COUPLER >	
⚠PC101	8-749-010-59	PHOTO COUPLER TLP721F	
⚠PC102	8-749-010-59	PHOTO COUPLER TLP721F	
⚠PC103	8-749-010-59	PHOTO COUPLER TLP721F	
		< TRANSISTOR >	
Q101	9-880-437-01	TRANSISTOR 2SK2798 (HS-030SU)	
Q101	9-880-450-01	TRANSISTOR 2SK2333 (HS-030SH)	
Q102	8-729-023-98	TRANSISTOR 2SC3377	
Q103	9-880-437-01	TRANSISTOR 2SK2798 (HS-030SU)	
Q103	9-880-450-01	TRANSISTOR 2SK2333 (HS-030SH)	
Q131	8-729-023-98	TRANSISTOR 2SC3377	
Q181	8-729-046-40	TRANSISTOR 2SK2663 (HS-030SH)	
Q181	9-884-097-01	TRANSISTOR 2SK2178 (HS-030SU)	
Q182	8-729-023-98	TRANSISTOR 2SC3377	
Q183	8-729-046-40	TRANSISTOR 2SK2663 (HS-030SH)	
Q183	9-884-097-01	TRANSISTOR 2SK2178 (HS-030SU)	
		< RESISTOR >	
R152	1-219-121-21	FUSIBLE 0.22 1/4W F	

Ref. No.	Part No.	Description	Remark
*	A-6065-345-A	SW-318 BOARD, COMPLETE (Taiwan)	
*	A-6065-351-A	SW-318 BOARD, COMPLETE (EXCEPT Taiwan)	
		**********************	
		(Ref.No. 5,000 Series)	
		< CONNECTOR >	
* CN098	1-568-941-11	PIN, CONNECTOR 3P	
		< DIODE >	
D098	8-719-056-06	DIODE SLR-342DCT32 (VIRTUAL 3D SURROUND)	
		< RESISTOR >	
R098	1-216-041-00	METAL CHIP 470 5% 1/10W	
		< SWITCH >	
S098	1-771-349-21	SWITCH, KEYBOARD (VIRTUAL 3D SURROUND)	

Ref. No.	Part No.	Description	Remark
*	A-6065-275-A	TK-51 BOARD, COMPLETE (EXCEPT Taiwan)	
*	A-6065-289-A	TK-51 BOARD, COMPLETE (Taiwan)	
		**********************	
		(Ref.No. 2,000 Series)	
		< CAPACITOR >	
C004	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C005	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C006	1-124-779-00	ELECT CHIP 10uF 20% 16V	
C007	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C008	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C009	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C010	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C011	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C012	1-124-779-00	ELECT CHIP 10uF 20% 16V	
C013	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C014	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C015	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C016	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C017	1-164-172-11	CERAMIC CHIP 0.0056uF 10% 25V	
C018	1-164-739-11	CERAMIC CHIP 560PF 5% 50V	
C019	1-164-172-11	CERAMIC CHIP 0.0056uF 10% 25V	
C020	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C021	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C022	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C023	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C024	1-164-730-11	CERAMIC CHIP 0.0012uF 10% 50V	
C025	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C026	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C027	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C028	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C029	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C030	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C031	1-124-779-00	ELECT CHIP 10uF 20% 16V	
C032	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C033	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C034	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C035	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C036	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C037	1-164-739-11	CERAMIC CHIP 560PF 5% 50V	
C038	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C039	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C040	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C041	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
		< CONNECTOR >	
CN001	1-785-700-21	CONNECTOR, FPC (ZIF) 23P	
CN002	1-566-529-11	CONNECTOR, FPC (ZIF) 13P	
CN003	1-785-699-21	CONNECTOR, FFC/FPC 18P	
CN004	1-785-699-21	CONNECTOR, FFC/FPC 18P	
		< DIODE >	
D003	8-719-988-61	DIODE 1SS355TE-17	
		< IC >	
IC001	8-759-567-24	IC SSI33P3722	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
		< COIL >			
L001	1-412-031-11	INDUCTOR CHIP 47uH			
		< TRANSISTOR >			
Q001	8-729-903-46	TRANSISTOR 2SB1132-T100-QR			
Q002	8-729-015-76	TRANSISTOR UN5211-TX			
		< RESISTOR >			
R001	1-216-815-11	METAL CHIP	330	5%	1/16W
R002	1-216-809-11	METAL CHIP	100	5%	1/16W
R003	1-216-809-11	METAL CHIP	100	5%	1/16W
R004	1-216-837-11	METAL CHIP	22K	5%	1/16W
R005	1-216-013-00	METAL CHIP	33	5%	1/10W
R006	1-216-013-00	METAL CHIP	33	5%	1/10W
R007	1-216-841-11	METAL CHIP	47K	5%	1/16W
R008	1-216-797-11	METAL CHIP	10	5%	1/16W
R009	1-216-834-11	METAL CHIP	12K	5%	1/16W
R010	1-216-833-91	RES, CHIP	10K	5%	1/16W
R012	1-216-864-11	METAL CHIP	0	5%	1/16W
R014	1-216-864-11	METAL CHIP	0	5%	1/16W
R015	1-216-833-91	RES, CHIP	10K	5%	1/16W
R016	1-216-833-91	RES, CHIP	10K	5%	1/16W
R017	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R018	1-216-833-91	RES, CHIP	10K	5%	1/16W
R022	1-216-811-11	METAL CHIP	150	5%	1/16W
R023	1-216-820-11	METAL CHIP	820	5%	1/16W
R025	1-216-813-11	METAL CHIP	220	5%	1/16W
R026	1-216-864-11	METAL CHIP	0	5%	1/16W
R029	1-216-861-11	METAL CHIP	2.2M	5%	1/16W

Ref. No.	Part No.	Description			Remark
*	A-6065-343-A	VR-70 BOARD, COMPLETE (Taiwan)			
*	A-6065-349-A	VR-70 BOARD, COMPLETE (EXCEPT Taiwan)			
		*********************			
					(Ref.No. 2,000 Series)
		< CAPACITOR >			
C835	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C836	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C838	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C840	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C844	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C845	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C846	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C847	1-104-664-11	ELECT	47uF	20%	25V
C848	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
		< CONNECTOR >			
CN841	1-695-368-31	PIN, CONNECTOR (PC BOARD) 7P			
* CN842	1-568-948-11	PIN, CONNECTOR 10P			
		< IC >			
IC804	8-759-100-96	IC uPC4558G2			
IC806	8-759-100-96	IC uPC4558G2			
		< RESISTOR >			
R849	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R850	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R861	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R862	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R864	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R867	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R879	1-216-049-91	RES, CHIP	1K	5%	1/10W
R882	1-216-073-00	METAL CHIP	10K	5%	1/10W
R884	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R885	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R886	1-216-037-00	METAL CHIP	330	5%	1/10W
R887	1-216-073-00	METAL CHIP	10K	5%	1/10W
R888	1-216-073-00	METAL CHIP	10K	5%	1/10W
		< VARIABLE RESISTOR >			
RV801	1-225-737-11	RES, VAR, CARBON 50K (MIC 1/3 LEVEL)			
RV802	1-225-737-11	RES, VAR, CARBON 50K (MIC 2/4 LEVEL)			
RV803	1-225-737-11	RES, VAR, CARBON 50K (ECHO LEVEL)			

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**************	
117	1-418-097-11	ENCODER, ROTARY	
122	1-791-079-11	CABLE, FLEXIBLE FLAT (FVM-11)	
127	1-790-167-11	CABLE, FLEXIBLE FLAT (FMF-35)	
153	1-790-166-11	CABLE, FLEXIBLE FLAT (FMT-25)	
154	1-790-163-11	CABLE, FLEXIBLE FLAT (FMA-7)	
155	1-790-169-11	CABLE, FLEXIBLE FLAT (FMA-10)	
156	1-790-165-11	CABLE, FLEXIBLE FLAT (FMA-9)	
⚠161	1-769-744-91	CORD, POWER (Singapore, Hong Kong)	
⚠161	1-782-510-11	CORD, POWER (Chinese)	
⚠161	1-790-390-41	CORD, POWER (Taiwan)	
167	1-790-164-11	CABLE, FLEXIBLE FLAT (FMA-8)	
⚠220	8-820-081-03	OPTICAL PICK-UP KHM-220AAA/J1RP	
M001	1-541-632-11	MOTOR, DC (LOADING)	

Ref. No.	Part No.	Description	Remark
	ACCESSORIES & PACKING MATERIALS		
	********************************		
	1-418-320-61	COMMANDER, STANDARD (RMT-D110E)	
	1-418-321-61	COMMANDER, STANDARD (RMT-D111E/N)	(EXCEPT Singapore)
	1-418-321-71	COMMANDER, STANDARD (RMT-D111E/H)	(Singapore)
	1-575-334-11	CORD, CONNECTION	(STEREO AV CABLE 1.5m)
	1-575-335-21	CORD, CONNECTION (S-VIDEO CABLE 1.5m)	
⚠	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P	(Hong Kong)
	3-055-539-01	COVER, BATTERY (for RMT-D111E)	
	3-053-633-01	COVER, BATTERY (for RMT-D110E)	
	3-867-039-11	MANUAL, INSTRUCTION	(ENGLISH) (EXCEPT Taiwan)
	3-867-039-21	MANUAL, INSTRUCTION	(SIMPLIFIED CHINESE) (Hong Kong)
	3-867-039-31	MANUAL, INSTRUCTION	(CORRECT CHINESE) (Singapore, Chinese)
	3-867-040-11	MANUAL, INSTRUCTION (ENGLISH) (Taiwan)	
	3-867-040-21	MANUAL, INSTRUCTION	(SIMPLIFIED CHINESE) (Taiwan)

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Replace only with part number specified.

9-921-731-11

Sony Corporation
Home Video Company

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